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REPORT of the
ROYAL COMMISSION
ON PRICE SPREADS
OF FOOD PRODUCTS

VOLUME III

MARCH 1960

Wesley Walton Jr

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FOREWORD

The Report of the Royal Commission on Price Spreads of Food Products, signed by the Commissioners, was released on November 30, 1959. The Report consisted of Volumes I and II. In the Introduction to Volume I reference was made to a supplementary volume (Volume III) which would consist of research documents, statistical data, and more extended studies of the marketing of particular commodities. The preparation of Volume III has now been completed.

The research papers, on which the material presented in Volume III is based, were available to Commissioners during the conduct of their inquiry and in connection with the preparation of Volumes I and II comprising the signed report of the Commission. Subsequently a number of these papers have been revised and edited for publication. Although the preparation of Volume III proceeded on instructions from the Commissioners, they have not reviewed the revised and edited documents contained in this volume. The volume is not signed by the Commissioners.

The original research papers were prepared by members of the Staff of the Commission, either individually or co-operatively. The editing of the papers for publication in Volume III has been done by Dr. J. A. Dawson, Secretary, and Mr. J. B. Rutherford, Director of Research. In the acknowledgments in Volume I, reference was made to the contribution of members of the research staff to the program of the Commission. Because of the extent of joint effort involved in the preparation of the original papers and the substantial revision in preparing the papers for publication, it would not be appropriate to attribute them to particular members of the staff. Reference may be made to contribution of Dr. W. M. Drummond, a member of the Commission, in the preparation of two of the papers included in this volume: The Role of Co-operatives in Canadian Food Marketing; and The Role of Marketing Boards in Canadian Food Marketing. The agricultural commodity studies which form a substantial part of this volume were carried out under the direction of Dr. W. E. Haviland. A complete list of the research staff follows.

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GENERAL STUDIES

THE ROLE OF CO-OPERATIVES IN CANADIAN FOOD MARKETING

For all practical purposes it may be said that organization and operation along co-operative lines have been an integral part of Canadian agricultural development. By far the larger part of the co-operative activity has been undertaken by farmers, with fishermen being responsible for a good deal of the remainder. While quite a number of co-operatives have been formed by consumers and particularly in more recent years, co-operation undertaken exclusively by and for consumers, has always constituted a relatively minor part of the total picture.¹ In this respect the Canadian experience has been in marked contrast to that of such food-importing countries as England and Germany where the first co-operatives were formed by consumers and where consumer co-operation has always been the main consideration.

If co-operation in Canada has been primarily agricultural co-operation, it is also true that the major part of the agricultural co-operation has been mainly concerned with the marketing of farm products. Indeed, until comparatively recent years, agricultural co-operation and co-operative marketing were virtually synonymous. As the number and economic significance of farm cost items has increased, however, the co-operative purchase and distribution of farm production goods and general farm supplies have assumed steadily increasing significance. Much of the growth of this type of co-operation has occurred within the last twenty years. In many cases co-operatives already engaged in marketing have expanded their activities to include the purchasing of supplies as well. Finally, there are co-operatives which are designed to provide various kinds of services. Of these the ones which supply short-term credit have much the longest history and are the most numerous. Other service co-operatives provide various kinds of insurance, electric power and telephone service, housing and a few even undertake to conduct funeral homes.

The development of the co-operative movement has been accompanied by a lot of experimentation. A natural result of this is that co-operative associations do not conform to any standardized pattern in their forms of organization or in respect of their operating practices. Diversification in these respects has been further added to inasmuch as different types of economic activity and different sections of the country have given rise to different problems. There is variation from area to area and industry to industry in respect of such things as the methods of financing, the extent and legal basis of operation and even in the terminology used to describe the organization and operation. Moreover, the terminology and the co-operative practices are both subject to more or less continuous change.

1 It may be noted, however, that there have been at least a few exceptions to this general rule. For example, The British Canadian Co-operative Society at Sydney, N.S., which is a consumer co-operative and which now has a membership of 9,000, has been operating continuously since 1906.

Despite this wide measure of variation, however, a general attempt has been made to ensure that co-operative organizations, regardless of their specific purpose or scale of operation, adhere to certain general principles which are ordinarily referred to as the recognized principles of the co-operative form of business organization. One of these is the concept of open membership, that is, the idea that membership in the organization should be open to all who wish to join and that no prospective member should be barred from membership because of his financial status.

A second principle aims at securing democratic control by requiring that no member can have more than one vote, no matter how many shares he may own. This is sometimes referred to as the one-member one-vote plan. Another principle is that which states that the rate of interest paid on any capital invested in the enterprise by the members shall be kept within definite limits. Another very important principle is that which provides that any surplus remaining after the costs of doing business have been met shall be distributed among the members in proportion to the extent of their patronage, i.e., in proportion to the use which they have made of the co-operative's services. In addition to these general principles there are some basic rules which co-operatives try to follow. One such rule, which is almost universally applied in Canada, provides that co-operatives will sell or buy any goods handled at regular market prices.¹ Other rules which tend to be somewhat less strictly adhered to include the provision that trading is to be done on a cash rather than a credit basis and the arrangement which makes financial provision for co-operative educational or promotional activities.

Those who have undertaken to provide a satisfactory definition of a co-operative have really been attempting to incorporate the foregoing principles in a single, concise general statement. One of the best of the many definitions which have been offered is found in Chapter 3 of the "Report of the Enquiry on Co-operative Enterprise in Europe, 1937" issued by the Government of the U.S.A. It is also the definition which appeared in the brief presented to the Commission by the Co-operative Union of Canada. It reads as follows:

"A co-operative enterprise is one which belongs to the people who use its services, the control of which rests equally with all the members, and the gains of which are distributed to the members in proportion to the use they make of its services."

To this one might add that those who join or patronize a co-operative do so purely voluntarily. In a co-operative both membership and patronage are intended to be entirely voluntary.

1 In some countries such as Sweden, where co-operatives are more firmly established than in Canada, this rule does not apply. In such cases the aim of co-ops is to offer real price competition.

The General Nature of Co-operative Development

As already indicated, interest in co-operation during the earlier stages of development centred mainly in the marketing sphere. Co-operative marketing was introduced gradually in all parts of Canada and in respect of almost all farm products. The movement first took concrete form in the 1870's when farmers began organizing and operating cheese factories and creameries. While these represented joint action for mutual benefit, they were rather loosely formed and unincorporated. Gradually, however, as organization became more permanent in nature, efforts were made to have the newly formed organizations incorporated under the general company laws of the provinces. From about 1890 to 1910 many co-operatives were incorporated in this way. But since the ordinary company laws made no provision for payment of patronage dividends, limitation of returns to capital and restriction of voting privileges, they were not too suitable for the incorporation of associations which were intended to operate in accordance with co-operative principles.

There was also the fact that many small groups of farmers could not afford the cost of incorporating under a companies act. These limitations gradually resulted in the enactment of special co-operative legislation by the various provinces. Such legislation, which has permitted incorporation at purely nominal cost has existed in all the provinces for many years. In fact some of the provinces have several co-operative acts. On the other hand there is still no special federal statute under which co-operatives may be incorporated despite repeated representations urging such legislation.

While the great majority of co-operatives are still relatively small and local in character, a great many of them have federated to form regional or provincial associations and thereby obtain the benefits which result from large-scale operations. In certain cases, where specialized production has been largely concentrated in particular areas, co-operative organization has tended to develop on a regional rather than a provincial basis. In a few important instances, also, the desire to secure additional economies of scale or additional ability to bargain or influence price has resulted in interprovincial or even nationwide organization.

Proportion of Food Marketing Performed by Co-operatives

In order to determine the degree of importance that should be attached to the part played by co-operatives in food marketing, it is necessary to find out how much of the marketing is being done by the co-operatives and whether their proportion of the total is changing. The fact, however, that marketing involves a series of steps or turn-overs, that the number and nature of these vary greatly from product to product and that the marketing channels are generally complex, makes it extremely difficult if not virtually impossible to obtain data which

measure, with any degree of exactitude, the total extent of the marketing performed either co-operatively or non-co-operatively. For complete and accurate information one would need such data for the country as a whole and the products as a group as well as for each region or province and commodity group. Since such information is not available it is necessary to reach conclusions based on the much more limited data which are available.

Some conception of the actual situation may be obtained by examining information relating to the performance of particular marketing functions. Table 1 indicates the manner in which the assembling function was shared by the different forms of business organization, including the co-operative form, in 1951.

TABLE 1 - ASSEMBLERS OF PRIMARY PRODUCTS, CANADA, 1951

	Total Number of Establishments	%	Sales (\$ thousand)	%
Total Reporting ^a	1,894	100.0	876,471	100.0
Individual Proprietorship	945	49.9	132,473	15.1
Partnership	237	12.5	103,398	11.8
Incorporated Companies	336	17.8	320,682	36.6
Co-operative Associations	370	19.5	318,198	36.3
Miscellaneous	6	0.3	1,720	0.2

a Of the total number of 7,179 assemblers of primary products, 6,779 dealt in products with which the Commission is concerned. Of these 5,285 grain elevators did not provide the above breakdown. Thus the 1,894 establishments which are included in the table do not include these elevators. On the other hand 400 assemblers which handle products with which the Commission is not concerned, are included.

Source: 1951 Census of Distribution, Wholesale Trade, Table 13.

According to the table 36.3% of the sales value of these primary products was assembled by co-operatives. It is obvious, however, that this figure should be raised considerably to allow for the assembling done by the grain elevators.

In order to make the required adjustment it is necessary to refer to Table 2 which shows the number and kind of assemblers to-

TABLE 2 - NUMBER AND KIND OF ASSEMBLERS AND VALUE OF PRIMARY FOOD PRODUCTS ASSEMBLED
IN CANADA IN 1951

Kind of Business	Buyers of Primary Products	Co-operative Selling Organizations	Grain Elevators	Packers and Shippers	Total	Total Sales (\$ thousand)
Grain	28	1	5,285	-	5,314	679,863
Livestock other than horses	321	89	-	-	410	380,166
Food products (except groceries & tobacco)	820	228	-	7	1,055	302,046
Totals	1,169	318	5,285	7	6,779	1,362,075

Source: 1951 Census of Distribution, Tables 3 and 14

gether with the value of the assembled products.

According to the table, grain accounted for almost exactly half of the total sales value in 1951. This fact, when combined with the assumption that approximately half of the grain was assembled by co-operative elevators,¹ leads to the conclusion that co-operative assembling of grain constituted 25% of the sales value of all products assembled. Since, as already noted, co-operatives assembled 36.3% of the products other than grain, and since these latter products represented half the value of all products assembled, it follows that the co-operative assembling of products other than grain constituted half of 36.3% or 18.2% of the sales value of all products assembled.

Since co-operative assembling of grain accounted for 25% of all assembling and since co-operative assembling of products other than grain accounted for a further 18.2%, a total co-operative assembling figure of 43% is arrived at.² This figure, of course, is for one year only and includes all food products and all sections of the country.

The extent of co-operative participation in the processing of food products is shown in Table 3. The table indicates that, during the 1949-57 period, the percentage of all processing establishments which were co-operative varied from slightly less than 11% to slightly less than 12%. It also indicates that, during the nine years, these co-operative establishments did about 6% of the total processing.

Since the percentage of establishments which are co-operative is significantly larger than the percentage of processing which is done co-operatively, one may reasonably conclude that the average size of the co-operative processing plants has been considerably smaller than that of the non-co-operative plants. The explanation for this becomes apparent when it is realized that no less than 538 of the 855 co-operative establishments in 1956 were engaged in processing dairy products and that the great majority of them were purely local cheese factories and creameries. The fact, however, that the number of co-operative plants and the co-operative percentage of all plants have both shown a steady if gradual decline while

1 At December 1, 1957 some 2,622 or slightly over 49% of the grain elevators in Western Canada were co-operatives, being owned by the three provincial pools and the United Grain Growers Limited. These co-operative elevators represented approximately 55% of the licensed country-elevator capacity.

2 In arriving at the figure of 18.2%, it was assumed that when the total sales figure of \$876,471 thousand in Table 1 is reduced to \$682,212 thousand (the non-grain part of the total sales figure in Table 2) the co-operative sales figure of \$318,198 thousand in Table 1 should be reduced by a corresponding percentage. In other words it was assumed that some of the 400 assemblers included in Table 1 which handle products which are not of interest to the Commission were co-operative assemblers.

the co-operative plants have continued to do about the same percentage of the total processing suggests that, on the average, the co-operative plants have been getting larger. The fact is that co-operative processing plants have been getting fewer and larger for several reasons. For one thing recent increases in farm production per unit of area have made for a larger scale operation by increasing the amount of product which had to be processed in a given area. In some cases the replacement of two or more small co-operatives by a larger one has become possible as plants have been destroyed or become worn out or obsolete. More important is the fact that many local co-operatives have found it physically and financially possible (partly because of transportation improvements), and technically as well as economically necessary to enlarge their scale of operations either through merger or otherwise. In many instances the newer and more expensive equipment required to perform additional kinds of processing in multi-purpose plants cannot be used efficiently except in conjunction with the volume resulting from the merger of two or more co-operatives. The wholesale reduction in the number of co-operative cheese factories and creameries in recent years has been due mainly to factors such as these.¹

The most significant conclusion to be drawn from the data contained in this table, however, is that the share of the processing which is done co-operatively has been barely holding its own. This revelation may come as somewhat of a surprise to many people who realize that recent years have witnessed a steady if gradual increase in both the dollar value and the absolute amount of processing done by co-operatives. Indeed the figures in Table 3 bear witness to this fact. However, parallel increases have occurred in the total amount of processing. Since total processing and co-operative processing have increased at roughly similar rates, the co-operative share of the processing has remained relatively unchanged. In connection with this share, however, there is reason to believe that it is at least slightly larger than the figures in the last column of Table 3 suggest. It must be noted that this table relates to beverages as well as foods. And since there is no record of any co-operative processing in the beverages industries, the value of the beverage products should be subtracted from the total value figures in Table 3 before calculating the co-operative share. If this adjustment were made, the share of co-operatives would be between 7% and 8%.

While such a figure may give a fair indication of the relative importance of co-operative processing for Canada as a whole and food products as a group, the fact is that this importance varies greatly from area to area and product to product. Some conception of the nature and extent of these variations may be obtained by examining the data in Tables 4, 5 and 6 which relate to the situation in 1956, the latest year for which information was available.

From these tables several conclusions can be drawn. For one thing, it is evident that the proportion of Canada's livestock and

1 In 1949 there were 680 co-operative cheese factories and creameries or 37% of the total of 1,862. By 1956 the total number had been reduced to 1,369; of these 532 or 39% were co-operatives.

TABLE 3 - CO-OPERATIVES IN THE FOODS AND BEVERAGES INDUSTRY, CANADA, 1949-57

Year	Number of Establishments		Gross Value of Products Sold			Per Cent of Total
	Total	Co-oper- atives	Per Cent of Total	Total	Co-oper- atives	
1949	8,558	942	11.0	2,882,582	178,134	6.2
1951	8,388	988	11.8	3,450,031	200,658	5.8
1952	8,263	952	11.5	3,472,517	202,759	5.8
1953	8,129	907	11.2	3,491,962	200,928	5.8
1954	8,090	886	11.0	3,562,547	206,726	5.8
1955	8,134	883	10.9	3,614,316	218,865	6.1
1956	8,023	855	10.7	3,826,702	232,366	6.1
1957	8,536	889	10.4	4,171,971	256,279	6.1

Source: Annual Summary Reports on the Foods and Beverages Industry, D.B.S.

TABLE 4 - CO-OPERATIVE PROCESSING OF LIVESTOCK BY AREAS IN 1956

Area	Total No. of Establishments	No. of Co-operative Establishments	Gross Selling Value of all Factory Ship- ments (\$ thousand)	Gross Selling Value of Co- operative Factory ship- ments (\$ thousand)	Per Cent Processed by Co-ops
Atlantic Provinces	11	0	20,466	0	0
Quebec	40	2	172,597	) ) ) 16,999	) ) ) 3.4
Ontario	55	2	332,271))
Manitoba	13	0	101,466	0	0
Saskatchewan	8	0	31,334	0	0
Alberta	15	0	132,087	0	0
British Columbia	12	0	54,667	0	0
Canada	154	4	844,889	16,999	2.0

Source: Foods and Beverages Industry Reports, D.B.S.

TABLE 5 - CO-OPERATIVE PROCESSING OF DAIRY PRODUCTS BY AREAS IN 1956

Area	Total No. of Establish-ments	No. of Co-operative Establishments	Gross Selling Value of all Factory Shipments	Gross Selling Value		Per Cent Processed by Co-operatives
				of Co-operative Factory Shipments	of Co-operative Factory Shipments	
			(\$ thousand)		(\$ thousand)	
Newfoundland	2	0				
Prince Edward Island	17	7	6,426	1,826		28.4
Nova Scotia	30	6	12,993	1,206		9.2
New Brunswick	30	7	9,819	3,180		32.4
Quebec	640	306	182,394	51,895		28.4
Ontario	478	90	202,221	21,962		18.5
Manitoba	70	17	28,042	6,421		22.9
Saskatchewan	57	38	28,017	19,279		68.8
Alberta	102	54	41,932	20,168		48.1
British Columbia	42	13	39,940	25,425		63.6
Canada	1,468	538	551,783	151,361		27.4

Source: Foods and Beverages Industry Reports, D.B.S.

TABLE 6 - CO-OPERATIVE PROCESSING OF FRUITS AND VEGETABLES BY AREA IN 1956.

Area	Total No. of Establish-ments	No. of Co-operative Establishments	Gross Selling Value of all Factory Shipments		Gross Selling Value of Co-operative Factory Shipments		Per Cent Processed by Co-operatives
			(\$ thousand)	(\$ thousand)	(\$ thousand)	(\$ thousand)	
Newfoundland	6	0	)		0		0
Saskatchewan	1	0	)	233	0		0
Prince Edward Island	10	3	)	1,050	342		32.6
Nova Scotia	16	3	)	4,236	)	)	5.5
New Brunswick	11	2	)	641))	
Quebec	124	9	)	39,614	1,473		3.7
Ontario	196	3	)	168,449	139		.1
Manitoba	9	0	)	2,739	0		0
Alberta	7	0	)	4,471	0		0
British Columbia	66	12	)	28,452	3,601		12.6
Canada	446	32	)	249,884	5,822		2.3

Source: Foods and Beverages Industry Reports, D.B.S.

fruits and vegetables which is processed co-operatively is extremely small, being just over 2% in the case of livestock and 2.3% in that of fruits and vegetables. These percentages are, therefore, very much smaller than the corresponding one for all products considered as a group. In the second place it is obvious that the part of the livestock and fruit and vegetable processing which is done by co-operatives is very unevenly distributed throughout the country. Co-operative livestock processing takes place only in Quebec and Ontario.¹ In the case of fruits and vegetables, co-operative processing is confined almost entirely to British Columbia, Quebec and the three Maritime provinces. Examination of the gross selling values also makes it evident that by far the greater part of it takes place in British Columbia. Only a small fraction of the processing in Nova Scotia, New Brunswick and Quebec is done co-operatively while the co-operative percentage in Prince Edward Island is nearly a third of the provincial total but only an insignificant part of the all-Canadian total.

A third conclusion and one which is especially significant is that most of the co-operative food processing in Canada actually consists of the co-operative processing of dairy products. No less than 27.4% of all dairy product processing in Canada is done co-operatively. Equally noteworthy is the fact that co-operatives do a really significant proportion of the processing of dairy products in all parts of the country. The proportions are particularly large in Saskatchewan, Alberta and British Columbia, being nearly half in Alberta and around two-thirds in the other two provinces.

Some further interesting conclusions result from an examination of the data in Table 5. It may be noted, for example, that the relationship between the percentage of product handled co-operatively and the percentage of all establishments which are co-operative varies widely from province to province. Whereas in Nova Scotia 20% of the plants were required to do 9% of the processing, in New Brunswick almost one-third of the processing was done by 23% of the plants. Likewise 48% of the Quebec plants were required to process the co-operative share of 28%, whereas Ontario's share of 18% was processed by 18% of the plants in that province. In each of the Prairie Provinces the percentage of plants which were co-operative was approximately the same as the percentage of product processed by co-operatives. In contrast, we find that in British Columbia the co-operative plants which formed considerably less than one-third of the total number did close to two-thirds of the processing. These figures suggest that the co-operative establishments were a good deal smaller than the non-co-operative ones in Nova Scotia and Quebec, that both kinds were about the same size in Ontario and the Prairie Provinces, that co-operative establishments were somewhat larger than the others in New Brunswick and, finally, that in British Columbia the co-operative plants were distinctly larger than the non-co-operative ones.

¹ A co-operative packing plant is being developed in Halifax but has yet to commence operations.

As mentioned earlier the number of co-operatives organized by and for consumers has been distinctly limited to date. In addition, however, to the food that is retailed by the consumer co-operatives that do exist, a significant and steadily increasing amount is purchased by those consumers who buy through co-operatives which handle farm producer goods and general household supplies. Table 7 gives a general indication of the part which co-operatives have played in food retailing during the past decade.

There are two main conclusions to be drawn from this table. The first is that only a small part of the retail marketing of food in Canada is done by co-operative associations. The actual proportion is in the neighbourhood of 2%. Almost equally significant is the fact that this percentage shows no signs of becoming any larger. On the contrary there would appear to be a slight tendency in the other direction. Even though the actual volume of co-operative retail sales has increased both steadily and fairly markedly, the fact is that these gains have been paralleled by corresponding increases in total retail food sales. As a result the relative importance of co-operatives in retail-marketing has remained substantially unchanged.

In order to reconcile the small percentage of food retailing done by the co-operatives with the relatively large number of co-operative associations which participated in retail marketing it is necessary to remember that the great majority of the associations indicated in the last column of Table 7 are general farm purchasing co-operatives which have been primarily concerned with the handling of commodities other than food. Indeed in many cases the food part of the business has been a relatively minor if not an incidental part of the total.

While co-operatives play a fairly minor role in the all-Canadian food retailing program, it should be stated that they perform quite a substantial part of the retailing in several urban centres in the western provinces and in a few limited areas in other parts of the country. Generally speaking, co-operative participation is important only in those relatively few places where sizeable consumer co-operatives have been organized.

General Summary Regarding Degree of Co-operative Participation

From the foregoing discussion the following general conclusions appear to be warranted. In the first place it is evident that by far the larger part of co-operative marketing activity has thus far taken place at the local-assembly level, i.e., at the first of the several stages which constitute the total marketing undertaking. The evidence shows that only 7 or 8% of all farm food products are processed co-operatively and that it is only in the case of dairy products that co-operative processing has made any significant headway and that even here there has been no tendency for the co-operative percentage to rise. When it comes to the retailing stage it is quite apparent that co-operatives have not played any significant part in the total picture. Despite notable successes in a few isolated instances, development of a few fairly large-scale co-operative retail stores, and a steady increase in the absolute volume of retail sales in recent years, the co-

TABLE 7 - CO-OPERATIVE RETAILING OF FOOD IN CANADA, 1949 - 1957

Year	Food Purchased at Retail		Per Cent of Total	Number of Co-operative Associations Reporting Sales of Food Products
	Total ^a (\$ million)	Through Co-operatives ^b (\$ million)		
1949	2,346	49.6	2.1	799
1950	2,584	56.5	2.2	857
1951	2,980	57.8	1.9	852
1952	3,127	58.5	1.9	790
1953	3,232	70.1	2.2	928
1954	3,404	63.9	1.9	802
1955	3,589	61.5	1.7	823
1956	3,843	68.2	1.8	798
1957	4,137	75.0	1.8	792

Sources: a Personal expenditures on food from National Accounts, Income and Expenditure, less food consumed on farms, other food eaten "in kind", and food consumed in restaurants.

b Annual Summaries of Co-operation in Canada for years ending July 31, prepared by Economics Division, Department of Agriculture. (While the completeness of the reporting may and does vary from year to year the Economics Division believes that 90% or over of the business of marketing and purchasing co-operatives is included. Comments on this point are made in the 1948 and 1957 reports.)

operative percentage of the total retail business has hardly been able to hold its own. Indeed it has shown a slight downward tendency in recent years.

Specific Functions Performed by Marketing Co-operatives

In the preceding section it was stated that most of the co-operative marketing activity has been undertaken at the local-assembly level, that co-operative processing has accounted for a much smaller part of it, and that co-operative retailing has been relatively insignificant. In other words, it has been suggested that co-operative marketing activity has tended to become much less pronounced as one proceeds from the initial to the final stages of the total marketing process. While such statements give a correct general picture of the actual situation, it is necessary to explain in somewhat greater detail the specific nature of the tasks or functions which the co-operatives actually perform in order to get a really clear understanding of the part played by co-operatives in marketing.

According to the D.B.S. Census of Distribution, establishments which are officially listed as assemblers may vary considerably in type but must all possess one distinguishing feature. Whatever their other characteristics or functions, they are not regarded as assemblers for statistical purposes unless they engage in the direct purchase of primary products for subsequent marketing either on their own account or on a commission basis. This means that, among other things, they buy the products from the farmers or other primary producers and, in so doing, they participate in the creation of a market and the establishment of the initial or farm price. In addition to this, however, assemblers are normally responsible for performing one or more additional tasks. The actual nature and number depends on various factors such as the type of commodity or commodities being handled, the market area being covered, the scale of operation, etc.

A few examples will serve to indicate the variety of situations which actually exist. As already noted, a large proportion of all co-operative assembling establishments consists of the country elevators which constitute an important link in the marketing of Western Canadian grain. In the marketing of this commodity the farm producer hauls the grain to the door of the elevator. There it is received by an elevator employee who weighs, grades and deposits it in a bin and then gives the farmer what is called an initial payment. The amount of the payment will be directly related to the recorded weight, the determined grade, the distance of the elevator from Fort William and the size of the initial payment which is established annually by the Canadian Wheat Board. In addition to his cheque and documents indicating the weight and grade, the farmer is given a participation certificate which entitles him to receive one or more additional smaller payments at later dates following the sale of the grain and the determination of the extent of the supplemental payments by the Wheat Board. On being placed in the elevator the grain is insured and stored there until such time as it becomes possible and desirable to transport it further east or west to a

terminal elevator. When that time comes the country elevator employees transfer the grain from the elevator bin to a box car and make whatever additional shipping arrangements may be necessary. In performing these several functions the elevator is acting as the agent of the Canadian Wheat Board. For its services it receives so much per bushel depending upon the kind of grain handled and the length of the storage period. The permitted rates are set and periodically revised by the Board of Grain Commissioners. It should also be noted that each local elevator is simply one link in a very long chain operated by one of the three Western pools or the United Grain-Growers Co-operative Company.

A case somewhat similar to the foregoing is that relating to the marketing of apples in British Columbia. In the Okanagan Valley there is a relatively numerous group of establishments commonly referred to as packing plants. While some of them are owned by private individuals or companies, a larger percentage are co-operative in character. When a grower harvests his apples he trucks them to one of these plants. The co-operative packing plant then undertakes to pack, grade, store and (later) load the apples into a railway car and ship them when asked to do so by B.C. Tree Fruits Limited, the central selling agency of the B.C. Fruit Board. The grower's choice of packing plant is normally made in the spring or beginning of the cropping season rather than at harvest time. In fact the growers are actually under contract with the packing houses to deliver their fruit to them. What happens is that the grower secures his supplies such as fertilizer, spray materials and containers from a packing house as needed and agrees to deliver his apples to that particular establishment when harvest time comes. It is important to note that the packing houses are in the supply business and that in addition to apples, they handle other kinds of fruit and vegetables in most cases.

The packing houses are required to keep the central selling agency informed regarding the supplies which they have on hand. By this means the central selling agency is kept constantly aware of exactly how many apples of each grade and variety are available and the particular plant or plants in which they are stored and from which they can be shipped. Whenever the selling agency (B.C. Tree Fruits Limited) receives an order from a broker it immediately confirms the order and telephones a packing house asking it to load a car and have it ready for shipment by a specific time, usually the next day. When the car is loaded the packing house notifies the selling agency's office giving particulars concerning the contents of the car, the car number, and the type of heating equipment.

In this particular marketing set-up the same price is paid by the selling agency for all apples of the same grade or quality. That is, it is a pooled average price. From this price the packing houses deduct their charges for performing the various functions mentioned above and return the balance to their grower patrons. It is this balance which constitutes the farm or producer price. Since different packing houses have different efficiencies and charge different amounts for their services, this price tends to vary somewhat from producer to producer.

It will thus be seen that a co-operative fruit packing plant occupies a position roughly comparable to that of a co-operative grain elevator. While neither the plant nor the elevator has any bargaining or price-setting authority in the strict sense, both reduce the price received by producers to the extent of the amount charged for their services. Likewise, so far as participation in buying is concerned, both operate as agents of a single price-determining authority. In both cases, also, any co-operative net earnings obtained are derived from charges made for performing specific services and not from buying and selling operations. A major difference, however, is that, whereas an elevator is but one link in a very long chain, most co-operative packing plants in the Okanagan are separate units.

In the marketing of Nova Scotia apples the assemblers, whether co-operative or other, are known as dealers. Generally speaking, they perform much the same functions as are undertaken by the packing houses in British Columbia. They normally pack, grade, store and ship the fruit. But, unlike the B.C. packing houses, a co-operative dealer in Nova Scotia actually buys the apples and takes possession of them in its own right and undertakes to sell the apples on behalf of its farmer-members. The amount obtained minus the co-operatives' operating costs constitutes the producer price. Since, however, the co-operative usually ships and sells to wholesalers and, sometimes, directly to chain or larger independent retailers, the producer price tends to approach the processor or wholesale price as well.

Where a co-operative assembling firm operates on a large scale as happens in the case of Scotian Gold which handles a large percentage of the total crop, the functions performed include a very considerable amount of processing. To this extent such a firm may be looked upon as a processor even though it is primarily concerned with the functions usually included under the general heading of assembling.

What has been said here in respect to the Nova Scotian situation applies also, generally speaking, to co-operative apple marketing in Ontario and Quebec. The actual number of functions varies somewhat with the size of the co-operative and the area served by it. The larger co-operatives are better equipped with storage and grading facilities, are more likely to undertake a certain amount of processing, and certainly are better able to deal directly with large retailers.

The functions performed by co-operatives handling dairy products differ in some important respects from those already mentioned. Regardless of what else they may do, dairy co-operatives almost invariably engage in some degree of processing. In view of this they are naturally classified as processors even though they usually perform other functions in addition to the processing. Moreover, inasmuch as the initial or producer price of the farmer's milk or cream is received from them, they may be thought of as assemblers as well as processors. Apart from this, however, the fact is that the number and nature of their functions varies considerably depending mainly on the scale of operation. Where the co-operative is a relatively small local establishment which operates as an independent unit it will be primarily concerned with obtaining raw material in the form of milk or cream, processing

it and disposing of the processed products. Indeed, apart from a certain amount of storing, curing and packaging, it is unlikely to have any other interests. On the other hand, where the co-operative is sufficiently large as, for example, in the case of the Fraser Valley Milk Producers' Association, the Northern or Central Alberta Dairy Pools, the Saskatchewan Cooperative Creamery Association, the recently constituted United Dairy and Poultry Cooperative in Ontario or the Cooperative Agricole de Granby in Quebec, several activities apart from processing proper are likely to form part of the total operating program. Such larger co-operatives often transport the milk or cream from the farms to the processing plants. In most cases they do the wholesaling while those selling liquid milk and cream do the retailing as well.

To a considerable extent the storage plants of the Saskatchewan Cooperative Creamery are used to provide a public cold storage service. This co-operative also acts as sales agent on a consignment basis for Delnor Frozen Foods and undertakes to obtain supplies for private ice cream dealers. Moreover, whereas many smaller co-operatives tend to concentrate on processing a single product such as cheese or butter, the larger ones are usually equipped to turn out a fairly wide range of dairy products. Indeed they commonly combine the handling of other commodities such as poultry and eggs with the dairy business.

Along with the processing proper most dairy co-operatives do a considerable amount of packaging. This is particularly true in respect of butter, a large part of which is made into pound or half-pound prints and wrapped before leaving the creamery. It is also true in the case of those co-operatives which retail fluid milk and cream. In such cases the pasteurizing process is naturally followed by the bottling and actual delivery of the product to the consumer.

From what has just been said it will be evident that, while all dairy co-operatives undertake at least some degree of processing, most of them act as assemblers and wholesalers as well. And, in particular cases, as where the distribution of milk and cream is undertaken, they even perform the retail functions.

Co-operatives engaged in livestock marketing are of three types. One type consists of local livestock shipping clubs or associations. Such an organization simply represents joint action on the part of a group of farmers in a local area to the end that the margin taken by independent drovers may be eliminated. Such associations are generally unincorporated and somewhat loosely organized and operated. Some farmer or other person in the area orders a livestock car or otherwise arranges for the loading and shipment of livestock on a specific date. He either visits or telephones farmers to ensure that sufficient livestock are forthcoming to fill the car and thereby keep the shipping costs per unit at a minimum. He also assumes responsibility for weighing and loading at the shipping point. For these services he receives a moderate payment from the association. When loaded the livestock are consigned to a central livestock market where they are sold by either a co-operative or private commission agency. In some cases they are sent directly to co-operative packing plants where such exist. In many instances the association is affiliated with the co-operative commission

agency or packing plant which disposes of the livestock. Thus co-operative shipping associations in Alberta operate in conjunction with the Alberta Livestock Co-operative Limited which acts as a central selling organization with selling agencies at the Edmonton and Calgary yards. Similarly the livestock commission department of the Saskatchewan Wheat Pool acts as the sales agency for shipping associations in Saskatchewan. Likewise in Ontario the few remaining shipping associations ordinarily sell through United Co-operatives of Ontario which sells livestock on commission on the Toronto livestock yards. When sales are completed the selling commission, yardage charges and transportation costs are deducted from the selling receipts and a cheque for the balance together with an itemized statement is mailed directly to the individual members of the shipping association.

While most livestock co-operatives are either local shipping associations or central commission selling agencies, there are also a few in Ontario and Quebec which take the form of packing plants. The Cooperative Federee in Quebec operates three such plants while the Copaco plant at Barrie, Ontario with about 1,500 farmer members in that general area has been operating for nearly 30 years. While primarily processing establishments, these plants also act as assemblers and wholesalers. For the most part their processed products are sold to retailers and, to some extent at least, are taken to the retail stores in the co-operatives' trucks. The prices received for these products less the co-operative's costs of operation are returned to the farmers and thus form the producer price. This price may, of course, be supplemented later by the amount of any patronage dividend which may be paid at the end of the co-operative's financial year.

Effects of Co-operatives on Prices and Price Spreads

It would seem that there are only three possible ways in which a co-operative might bring about higher producer or lower consumer prices. If it was larger, stronger or for any reason more efficient than its private competitors, it could presumably demonstrate this superiority by paying higher prices to producers or accepting lower prices from consumers. If, on the other hand, it was not capable of doing this, its co-operative competition might still be strong enough to cause market prices generally to be more completely competitive and therefore more favourable to producers and consumers. And, finally, even though a co-operative might not be able to force competitors to raise or lower prices, it might at least find it possible to equal the less satisfactory price treatment being meted out by them. In other words, even though it might not be able to bring about better prices, it might be able to pay or charge prices that are just as good. In the first two cases the improved prices resulting from co-operative action would benefit producers and consumers generally. In the third case, on the other hand, any price benefits would go to members of the co-operative only and then only to the extent that the co-operative managed to supplement the price paid or charged by paying a patronage dividend.

While it is possible to find illustrations of all three types

of situation just indicated, there are certainly very few cases where Canadian co-operatives have deliberately set out to pay more or charge less than their private competitors. An outstanding exception in this regard is the British-Canadian Co-operative Society in Cape Breton, a consumers' co-operative which has been operating continuously since 1906. While it now handles almost all consumer goods, its business for many years was mainly in foods including the operation of a fluid milk distributing service and a bakery. It is significant that for years it has sold bread for 1¢ a loaf below the price regularly charged by competitors and has paid farmers 20¢ per 100 pounds more than the price set by the Provincial Milk Board. Moreover, because its dairy operations have shown a surplus, it has been able to return a patronage dividend to members and thereby give them the benefit of a lower consumer price.¹ By thus raising the producer price and lowering the consumer price, this co-operative has obviously managed to narrow the marketing spread so far as its own membership is concerned.

That Canadian examples of the type just illustrated are extremely rare is perhaps best indicated by the generally declared co-operative pricing policy. In answering the Commission questions, representatives of co-operative unions and operating co-operatives at various centres were virtually unanimous in stating that the actual practice as well as the general policy was to pay or charge the going or regular market price in the area concerned. That is, they aim to abide by the widely recognized co-operative rule of buying or selling "at the market". This, however, does not mean that Canadian co-operatives have never been strong enough as competitors to help determine the level of these so-called regular market prices. On the contrary there have been a significant number of instances, and some of them affecting large numbers of producers or consumers, where market price levels have been definitely influenced by the competition supplied by co-operatives. In general, this type of influence over price making has tended to vary directly with the percentage of the product being handled by the co-operative. There can be little doubt, for example, that co-operatives such as the Saskatchewan Co-operative Creamery Association, the Fraser Valley Milk Producers Association, the Maritime Co-operative Services, Scotian Gold and several others have been able to exert a very real degree of price making influence simply because they handled relatively large percentages of certain commodities in particular market areas. In certain circumstances, however, the mere fact that these organizations were large scale and did a large percentage of the total business has not been sufficient to guarantee any pronounced degree of price-determining ability. Further reference to this point will be made later.

Since the great majority of the marketing co-operatives are small scale local enterprises and since, in many cases, they market only a small fraction of the product, it follows that they have been unable to exert any pronounced influence on prices. In most such cases they have had to be content with falling in line with price levels establish-

¹ See brief presented to Commission by Co-operative Union of Canada, Proceedings, p. 4174. Information was supplied also by this Co-operative in the answers to the Commission's questionnaire.

ed by others whether they consider such prices satisfactory or otherwise. In certain instances, however, where the percentage of a commodity handled in a particular market was reasonably large, even local co-operatives have managed to exercise a significant influence on prices paid or charged.

This does not mean, however, that local co-operatives have never been able to obtain higher prices for their producer members. The fact is, however, that where such higher prices have been secured, it has usually been due to the fact that, because of co-operative organization, it has been possible to dispose of the commodity at a more advanced level or stage in the marketing process and not because of any ability to bring about a higher price at any particular level. An illustration of such a situation is found in the operations of the Capital Co-operative of Fredericton. By adopting the policy of selling eggs directly to retailers rather than to packing houses and wholesalers, this co-operative has been able on occasion to increase the price received by its farmer members by several cents a dozen.¹

A somewhat different example of price improvement effected by co-operation action is cited in the brief presented by Maritime Co-operative Services. During the last five months of 1951 this co-operative shipped 26 cars of cattle from the Maritimes to Montreal. By simply selling in Montreal rather than in the Maritimes, net returns to producers were increased by over \$4,000 above what they could have received in the Maritimes. Moreover, the shipping of the cattle to Montreal apparently resulted in price advances in the Maritimes at a season when price declines normally occur. Because of this the action of the co-operative made it possible for all producers who sold in the Maritimes at this period to gain some price advantages. The statement just made points to something of very real importance regarding the possible effects of co-operative pricing action. Where that action causes changes in general market price levels the benefits of the higher or lower prices accrue to producers or consumers generally and not merely to those who happen to be co-operative members. On the other hand, where co-operative action is not sufficient to cause any change in general price levels, any price benefits received are likely to be due to special co-operative policies or the particular mode of operation characteristic of co-operatives and to go only to those who are co-operative members. In this connection it may be noted that one reason why many producers or consumers have not seen fit to join co-operatives is that they have been able to secure price improvements resulting from the action of co-operatives without having to share any of the burdens incidental to co-operative organization and operation.

In the case cited above where the action of Maritime Co-operative Services resulted in higher cattle prices for Maritime producers the result was obtained because the co-operative found it both possible and desirable to sell in Montreal rather than in the Maritimes. While it might be thought that this was something that could have been done

¹ See brief presented to the Commission by Maritime Co-operative Services Limited, Proceedings, pp. 1762-4.

by the producers acting individually as well as by the co-operative, the fact is that it would not have been economical to ship the cattle to Montreal in less than carload lots; this was possible only because the marketing was done co-operatively. Even were this not the case, however, co-operative action would have been necessary inasmuch as many of the individual producers would not have been in a position to obtain regular and reliable information regarding prices in the different markets.

If co-operatives can sometimes influence the price obtained by controlling the place of selling, they can equally expect to influence price by controlling the time of selling. By undertaking storing operations they can reduce the supply offered at any specific time, extend the marketing period in the case of seasonally-produced commodities and thereby obtain a somewhat higher average price for the period. By performing place or time economies such as those just indicated many co-operatives have changed the supply and demand relationships and therefore the prices resulting from their interaction. It is also true that by performing certain marketing functions previously undertaken by other agencies, quite a number of co-operatives have been able to retain ownership for producers until somewhat later stages of the marketing process and to sell at the higher prices that naturally result from selling at those later stages.

As already mentioned, a co-operative which may not be strong enough to influence the level of a market price may find it quite possible to fall in line with an already established price. Where such is the case the operations of the co-operative may well result in its members receiving or paying the equivalent of a higher or lower price than producers or consumers who are not connected with co-operatives. The explanation of why this is so is somewhat as follows:

While a co-operative has to pay interest on fixed and operating capital just as private operators do, it does not have to declare a shareholder's profit. In the case of the co-operative the shareholders are the members and also the suppliers of the business. They are people who get their income from some activity such as farming and do not have to get it in the form of a profit out of their co-operative business. This means that a co-operative can actually operate at cost whereas other distributors, in addition to covering costs, must be able to provide the shareholders with a profit. In effect what this means is that, if a co-operative can operate as efficiently as other types of distributors, it will have a surplus over costs the same as the other distributors. But, whereas this surplus permits the private corporations to declare a profit which is paid to their shareholders, it (the surplus) is returned to the co-operative members who are also the patrons in the form of a patronage dividend. Those who receive such a dividend are really getting the equivalent of a higher selling or lower buying price. On the other hand, the profit declared by a corporation cannot increase the selling price or reduce the buying price because it is not paid to the same people who sell to and buy from the corporation. Since payment of a patronage dividend gives producers the equivalent of a higher price and consumers the equivalent of a lower price, it results in a narrowing of the marketing spread so far as the

co-operative members are concerned.

If it was the unfailing practice for co-operatives to pay regular and sizeable patronage dividends, their indirect effect on prices and on the width of the spread would certainly be significant. The fact is, however, that, for one reason or another, a good many co-operatives have not been able to declare patronage dividends either at all or with any degree of regularity. On the other hand, there are large numbers of co-operatives which have had long and outstanding dividend paying records. A few examples may be cited to indicate the actual accomplishments and possibilities in this connection. In the past 33 years the Saskatchewan Wheat Pool members have invested about \$25 million in their co-operative mainly through elevator deductions on their grain. In the same period they have received back about \$46 million in cash patronage earnings and at the same time have built up assets of nearly \$60 million in the plants, elevators and equipment.¹ Between 1906 when it was organized and 1957 the British-Canadian Co-operative Society in Cape Breton returned to its members in patronage dividends over \$5.3 million. Moreover its 1957 report showed assets of over \$1 million of which \$800,000 was owned directly as capital (not as reserve) by the members. The rate of patronage refunds for the year ending May 7, 1958 was 5½%, the actual patronage refunds amounting to \$180,428.² The Saskatchewan Co-operative Creamery which is now the largest single handler of butter, milk and poultry products in the province returned some \$3 million in patronage refunds to farmer owners between 1946 and 1956.³ The Saskatchewan Dairy and Poultry Pool which had a membership of 40,000 and sales of \$5.5 million in 1956 returned some \$80,700 in patronage refunds to its members in 1957.⁴ In 1956 Saskatchewan marketing co-operatives performed one or more marketing functions in respect of 42% of all eggs marketed, 56% of the poultry, 68.5% of the dairy products, 57% of the sheep, 31% of the hogs, 50% of the cattle and calves and 53.2% of the grain marketed. And over the years a total of over \$100 million in patronage refunds from marketing co-operatives has been added to the income of Saskatchewan farmers.⁵ Moreover, because of the large percentages of products handled co-operatively, the Saskatchewan marketing co-operatives have undoubtedly exerted a strong competitive influence on the determination of market price levels in general.

United Co-operatives of Ontario is a central co-operative wholesale owned and operated by 150 local co-operatives which in turn are owned by 60,000 Ontario farmers. During the past 10 years this co-operative has returned to members the sum of \$2,892,000 in patronage

1 Brief of Co-operative Union of Canada, Proceedings, p. 4166.

2 Reply to Commission questionnaire

3 Brief, Co-operative Union of Saskatchewan, Proceedings, p. 1501; also reply to questionnaire

4 Ibid. Proceedings, p. 1502.

5 Brief, Co-operative Union of Saskatchewan, Proceedings, p. 1503.

dividends.¹ Of this amount, however, only a limited fraction was derived from the agricultural marketing business. In the year ending September 1958, for example, total patronage returns amounted to \$737,654 and, of this total, some \$105,658 or about one-seventh represented savings made in connection with marketing.² In March 1958 there were 513 agricultural co-operatives including two provincial organizations in the province of Quebec. These co-operatives had 69,000 farmer members and transacted business to the extent of \$150.7 million of which 60% related to the marketing of farm products.³ The records show that during the last 20 years these co-operatives have paid their members at least \$12 million in cash patronage dividends without counting the important part of those dividends which have been used for co-operative expansion purposes.⁴

That payment of patronage dividends has by no means been confined to the larger co-operatives can be readily seen by noting the situation in respect to any one of a large number of smaller local organizations. It may be noted, for example, that La Menagere, Rimouski, Quebec (a consumers' co-operative) paid its members a cash dividend of \$4,150 in 1957 while a further patronage dividend of \$4,576 was credited to the loan or share accounts of its members in 1957; that International Co-operative Stores in Port Arthur paid a patronage dividend at the rate of 1% of sales in 1957; that Co-operative Farm Services of Moncton returned to butterfat producers 1¢ per pound butterfat bonus to all suppliers plus another 2¢ per pound to shareholder members in addition to the regular price and also allotted to the consumer section of their dairy-creamery operations the regular consumer patronage dividends on any of these products sold through their store;⁵ that the Consumers Co-operative Society, Timmins, has returned \$338,500 to its members as patronage dividends during its 27 years of operation; that the Sudbury Producers and Consumers Co-operative Dairy Limited, in addition to paying large producer dividends, has given a rebate of 1¢ per quart to each customer who purchased one quart a day, and multiples of this amount to larger customers; that, in addition to the daily market price paid at time of delivery, the members of the First Co-operative Packers of Ontario received an additional payment in the form of a dividend of 67¢ per hog at the close of the 1957 fiscal year; that Cooperative Agriculture de Granby refunded \$25,552 in cash to its members in 1957 and, in addition, credited \$16,778 to their loan or share accounts; that Grand Falls Co-operative Society in Newfoundland, a consumers' co-operative handling a variety of commodities including food products, refunded \$12,546 in cash to its members in 1957 besides crediting their loan

1 Brief presented to Commission by United Co-operatives of Ontario, Proceedings, p. 2336.

2 1958 Annual Report, United Co-operatives of Ontario

3 Document of the Cooperative Federée de Quebec to the Royal Commission on Price Spreads of Food Products, p. 43.

4 Ibid.

5 Maritime Co-operative Services brief, Proceedings, p. 1761.

accounts to the extent of \$12,703; that in 1957 the Harwood Co-operative Creamery, by paying a patronage dividend of \$58,846, added 4.4¢ a pound to the price which its members received for butterfat; or that, the North Bay Co-operative Creamery declared a patronage dividend of \$5,719 in 1957.¹

Some Limiting Factors

While there is ample evidence to prove that co-operatives have exercised considerable influence over the prices received by producers or paid by consumers and at least some influence on the width of the spread, the fact is that there are several factors which have seriously limited the extent of this influence, especially in more recent years.

To begin with, co-operative influence on price levels and price spreads is limited simply because the extent of co-operative participation in marketing is limited. Since, as already noted, the percentage of the commodities handled co-operatively is often distinctly limited even at the lower levels of marketing and since the percentage becomes steadily and rapidly smaller as products move toward the consumers, it follows that the extent of co-operative influence will tend to correspond with this limited degree of participation. Moreover the fact that most of the co-operative marketing activity has been at the lower levels suggests that most of the influence which co-operatives have had on food prices has been exerted at the producer rather than the consumer end of the marketing chain.

Quite different are the limiting factors which become apparent when the actual facts relating to the marketing of specific commodities are examined. In at least some cases the limiting factors are really institutional obstacles. In the case of western grains, which constitute a major part of Canadian co-operative marketing, the four co-operative marketing agencies, namely the three provincial pools and the United Grain Growers, can have had little or no influence on the selling price. The reason is that, since 1943, the selling function has been performed by the Canadian Wheat Board and not by the co-operatives. If farmers have received any additional income as a result of the activities of the co-operatives it will have been achieved indirectly due to increased operating earnings. It seems probable that the equivalent of a very small increase in price has been obtained in this way since, during the last decade, the ability to keep elevator facilities in use on a capacity basis has added significantly to earnings. In the case of butter which represents another large part of the total co-operative marketing activity, the factor primarily responsible for determining the selling price has been the Federal Government price support program and not the creameries, whether co-operative or private. Government buying and selling operations have kept butter prices from dropping below certain levels during most of the last decade. While these operations have virtually insured processors against the normal operating

1 Unless otherwise indicated the information relating to the several co-operatives referred to above has been obtained from answers to the Commission's questionnaire.

risk of suffering periodic losses, they have also made it difficult or even impossible for processors in surplus-producing areas to retain hard-won trading connections in major consuming centres.

The foregoing comments regarding butter apply also to a considerable extent to several other food products including eggs, cheese, powdered milk, poultry meat and even pork and beef. The main difference here is that, whereas butter prices have been almost continuously subject to price supporting operations, the prices of the other commodities mentioned have remained above support levels during varying parts of the last 10 years.

A further factor which has stood in the way of any direct price-determining influence which co-operatives might have had is the current practice in some areas of setting minimum prices of a significant list of products by means of negotiation. Wherever marketing boards of the negotiating type have existed, the possibility of establishing prices by the ordinary competitive process has tended to disappear. While negotiated prices have applied mainly in respect to marketing in Ontario, they have recently become increasingly common elsewhere and particularly in Quebec. In this same general category it may be stated that the price-setting actions of the various provincial milk marketing boards have placed further important limits on the ability of co-operatives to influence market price levels.

Finally, regardless of any effects of co-operatives on prices at the farm or other earlier marketing levels, the very fact that consumer co-operatives have been relatively absent has not only placed early limits on the ability of co-operatives to reduce consumer prices but has made it correspondingly difficult to reduce marketing spreads. The mere raising of the general level of producer prices through co-operative action need not result in any narrowing of the spread. Instead it is more than likely to be simply reflected in a corresponding increase at the consumer end. To the extent that this is the case it would seem that co-operatives have contributed to spread narrowing only under one or other of two sets of circumstances. On the one hand they have done so in the relatively few cases where it has been possible for them to both reduce consumer and raise producer prices. In the second place, wherever it has been possible to supplement a regular producer price by payment of a patronage dividend, the equivalent of spread narrowing has resulted even though no change has occurred in consumer price levels. In this latter case, however, the spread-reduction benefits have gone only to the members of the co-operatives concerned. But since a very large percentage of all Canadian producers are members of marketing co-operatives, these particular benefits may well be widely shared.

Co-operative Wholesaling Activities

Earlier in this discussion when fairly detailed consideration was given to the nature and extent of co-operative assembling, processing and retailing, no special attention was paid to the wholesaling activities of co-operatives. This omission was due to the lack of statist-

ical information concerning wholesaling similar to that presented in respect of the other three operating stages. In view of this omission and despite the absence of relevant statistical data there are a few general facts about co-operative wholesaling which should be stated.

For one thing quite a number of the co-operatives which are primarily engaged in and officially classified as processors actually perform wholesale functions as well. A great many of the creameries, for example, sell and deliver directly to retailers and also provide a considerable amount of storage. The same may be said of many of the larger or regional co-operatives handling apples and other fruit and poultry products. The fact is that quite a number of the larger organizations which receive goods on consignment from local co-operatives or even from individual members deal directly with the retail trade and to that extent must be recognized as playing wholesale roles. Indeed, as already noted, there are co-operatives which combine the various functions ordinarily associated with assembling, processing and wholesaling. The First Co-operative Packers provides an illustration of this.

In addition to these co-operatives which engage to a greater or lesser extent in wholesaling activities, however, there are a number of others which have been specifically set up to perform wholesale functions. During the past 10 years with which the Commission is particularly concerned, and for a considerable period prior to that, co-operative wholesale organizations have been operating in every province except Newfoundland. At present there are 10 of these organizations. All are provincial or regional federations of local co-operatives and they in turn are federated upward into Interprovincial Co-operatives Limited which was organized in 1940 to consolidate the buying of the regional and provincial co-operative wholesale organizations and to acquire and operate processing and manufacturing facilities. Significant differences exist in the functions and operations of the organizations. All of them supply merchandise including food supplies to their local co-operative members. But, whereas those in Western Canada do not engage in the marketing of farm products, those in the Eastern Provinces from Ontario to the Maritimes also act as central marketing agencies for farm products such as livestock and dairy products. Except for dairy products little processing is done by these organizations although the Cooperative Federee, one of the two co-operative wholesale organizations in Quebec, owns and operates facilities for processing livestock and poultry. In Western Canada the provincial wholesale organizations do not engage in agricultural marketing since this is essentially being looked after by other provincial or regional co-operatives such as the three provincial wheat pools, the United Grain Growers, the Northern and Central Alberta Dairy Pools, the Saskatchewan Co-operative Creamery, the Manitoba Dairy and Poultry Co-operative and other similar agencies. While these latter organizations may often be primarily concerned with processing, they normally perform wholesale functions also, as has been indicated earlier in this discussion.

While agricultural marketing is undertaken by all the eastern organizations, it forms a particularly important part of the total business in the case of the Cooperative Federee. No less than two-thirds

of its business is derived from the sale of farm products.¹ This provincial wholesale organization which is a federation of about 375 or three-quarters of all local agricultural co-operatives, with 50,000 members or 40% of the farmers of the province,² receives the farm products from its member co-operatives after which it grades, packages, processes (in some cases), stores and sells them.

Although there are four co-operative wholesale organizations in the Maritime Provinces, the major organization is Maritime Co-operative Services Limited at Moncton, New Brunswick. Over 200 local groups in three Maritime provinces are shareholder members of this organization. The other three wholesale organizations are, in effect, regional members of Maritime Co-operative Services.

The annual reports of the three main eastern organizations, the Maritime Co-operative Services, the Cooperative Federee and the United Co-operatives of Ontario, show a continuous and significant upward climb in the absolute volume of marketing business done in the last 10 years. Despite these absolute increases, however, their percentage of the total marketing has remained substantially unchanged.

While the greater part of the goods distributed by the wholesale organizations to their local member co-operatives consist of live-stock feed, fertilizers, machinery of various kinds, household appliances and various other farm producer items, they also handle a wide variety of food products. Moreover, their food business has shown a steady if modest increase in recent years. Some indication of the progress in this direction may be obtained by noting that, whereas groceries accounted for 11.7% of the co-operative wholesale business in 1953, they made up 15.1% of a far larger total in 1957.³ This increase has been partly due to the fact that the local co-operatives have been handling a larger volume of food products but even more to the fact that the local co-operatives have tended to obtain more of their food supplies through the co-operative wholesale organizations rather than from independent wholesale sources. Inasmuch as these local co-operatives, including those consumer co-operatives which are primarily interested in retailing food, have been unable to secure the advantages which independent food retailers get from becoming part of a voluntary chain, they have been under increasing pressure to overcome these disadvantages by securing their requirements from co-operative rather than independent wholesalers. The co-operative wholesale organizations in turn have had to expand their facilities and activities to meet the food supply needs of their local co-operative members. It was for this reason that the co-operative wholesale organizations in both Ontario and Quebec began handling groceries for the first time in 1954,⁴ and that Federated Co-operatives Limited (the wholesale organization for Sask-

1 Document of the Cooperative Federee de Quebec to the Royal Commission on Price Spreads of Food Products, December 1958, p. 48.

2 Ibid.

3 Co-operation in Canada, published annually by the Economics Division, Department of Agriculture, Ottawa.

4 Co-operation in Canada, 1954, p. 23.

atchewan and Manitoba) built a \$250,000 grocery warehouse in Regina in 1956. In somewhat the same way the regional and provincial co-operative wholesale organizations have found it increasingly desirable to get more of their supplies, including food supplies, from the national and international co-operative wholesale organizations. Finally these national and international co-operatives have shown an increased tendency to manufacture or process the needed supplies so as to avoid having to purchase them. Thus we find that it was not until 1947 that Interprovincial Co-operatives Limited added groceries to its list of commodities.¹ Since then it has gradually increased the number of food commodities handled. In 1949 it began distributing flour, manufactured in the mill built by the Saskatchewan Wheat Pool in 1948.² From that time also it was able to supply products such as salmon and jams under a co-operative label. In 1950-51 it opened a new coffee processing plant at Vancouver and began selling coffee under a co-operative label.³ In 1952 it rented and began operating a cannery at Beamsville, Ontario.³ In 1955 it leased a second canning plant at Dunville, Ontario.⁴ But, while steps such as these have been sufficiently numerous and varied to indicate the existence of a definite trend, it cannot be said that the co-operative wholesaling which they represent constitutes any significant part of the country's food wholesaling business.

Impact of the Retail Chains on Co-operative Organization and Operation.

It is quite apparent that the rapid growth of the large retail chains has affected co-operatives in several ways. For one thing it made it necessary for those co-operatives which sell directly to the chains to undertake additional processing and packaging. Co-operative creameries, for example, have had to put much more of their butter in pound or half-pound prints in order to comply with the retailers' requirements. Similarly co-operative poultry processing plants have had to undertake additional processing in accordance with the retail buyer's specifications. In the second place the desire of the chains to feature their own brands has made it increasingly difficult to maintain specific co-operative brands in other than co-operative retail outlets. In the third place there are indications that growth of the chains has been exerting pressure on the co-operatives to increase the scale of their operations through merger or otherwise in order to meet the chain's requirements for a large and continuous supply of uniform product. It is also evident that the growth and consequent increase in bargaining power of the chains has been causing at least some co-operatives to think in terms of increasing their bargaining power as sellers by having several local organizations arrange to sell jointly or undertake to sell

1 Co-operation in Canada, 1953, p. 29.

2 Co-operation in Canada, 1953, p. 29.

3 Co-operation in Canada, 1952, p.3.

4 Co-operation in Canada, 1955, p.1.

through large central co-operatives. The most outstanding example of the type of situation just indicated which has been brought to the Commission's attention is that relating to the marketing of Ontario's dairy and poultry products.

For many years United Co-operatives of Ontario (the provincial co-operative wholesale organization) has operated a Dairy and Poultry Division. The activities of the Division have included operation of a number of creameries, three of the seven largest powdered milk plants in the province, and wholesale handling of eggs and poultry. Earnings distributed by the Division have averaged \$52,000 per year for the last 10 years.¹ In 1958 arrangements were completed for the establishment of the United Dairy and Poultry Co-operative. This is a provincial dairy and poultry marketing co-operative organized on a central ownership basis. Its organization is designed to result in a merging of the dairy and poultry operations of United Co-operatives of Ontario with the local dairy and poultry marketing co-operatives of the province. The United Co-operatives of Ontario operations were transferred to the new organization on October 1, 1958 and, since then, several local dairy and poultry co-operatives have responded to the invitation to merge with the new co-operative.

The nature of the thinking on which this particular development has been based is clearly indicated in some of the statements contained in the brief presented to the Commission by the president of the new co-operative.² Among these the following are especially significant:

"We recognize that developments today in agriculture indicate that plants must be large, diversified and efficient. --- The output of the total creamery plants in Ontario numbering 217 could be handled by 92 co-operative creameries. The result would be greater efficiency, a higher return to the producer, a narrower spread and an overall increase in quality. --- In the case of eggs quality control starts with the right strain of laying flock, controlled feeding, on-farm refrigeration, frequent delivery to retail outlets where product is held continuously under refrigeration. --- The producer must follow his product more closely in each successive step and enter more aggressively into processor marketing. --- There are two areas in which the competitive bargaining position of the primary producer could influence spreads between producer and consumer. I refer, first, to a situation which might appear to be developing when a single organization engaged in either processing or retailing becomes so dominant as to exercise a strong downward pressure on prices at producer level, and is big enough to set the pace for the market reflecting in reduced prices to the primary producer. In the other instance I suggest that, other than the co-operatives engaged in food processing, the only organized upward pressure on price takes place after the product is out of the

1 Brief presented to Commission by United Dairy and Poultry Co-operative, Proceedings, pp. 2332-5.

2 Ibid.

hands of the primary producer. The resultant spread that develops at this point may not be in either producer or consumer interests."

These quotations clearly indicate why the new co-operative is designed to provide the most efficient facilities for receiving, processing and packaging dairy and poultry products; to act as a central selling agency and thereby improve producer bargaining power when dealing with the big retailers; and to meet the current requirements of the large retailers in respect of quantity, quality and service.

In reality those responsible for this program are merely trying to provide Ontario producers with a centralized marketing co-operative similar to the Western Canadian dairy and wheat pools which have been operating on a regional or provincial ownership plan.

In addition to all the foregoing there is still a further comment regarding the relationship between chain store development and co-operatives that should be made. In at least a number of cases the representatives of consumer co-operatives state that the increasingly keen competition of the retail chains has forced them to depart somewhat from their generally declared aim of keeping the number of brands or varieties of each commodity, the number of unit sizes and the advertising and promotional expense as low as possible.¹ They also maintain that the "loss leader" and special promotional policies followed by the chains have made it increasingly difficult for the co-operatives to compete effectively on a price basis.

Relationship Between Co-operatives and Marketing Boards

In order of development co-operative organizations have preceded marketing boards. Moreover the history of marketing boards indicates that they have normally been created with the idea of achieving certain marketing goals which producers have considered desirable but which could not be attained through co-operative organization. Organization of marketing boards has been thought of as an alternative to, a substitute for or even as an improvement upon co-operative operation. There is also the fact that, to most people, co-operatives and marketing boards have represented diametrically opposed concepts. Whereas the former stood for purely voluntary action, the essential feature of the latter was complete control achieved through legalized compulsion.

In view of this history and these attitudes it is most significant that recent years have witnessed the development of a number of situations in which co-operatives and marketing boards are combining.

1 This point was discussed in the questionnaire replies of the following co-operatives: Consumers Co-operative Society, Timmins; Peoples' Co-op (Port Arthur); The British Canadian Co-operative Society; and "La Familiale" Cooperative de Consommation.

Instead of being considered as alternatives or substitutes they are really being used to supplement each other. We are referring here to that significant number of cases in which co-operatives are acting as the buying or selling agents of marketing boards. Co-operatives acting in this capacity include the B.C. Coast Vegetable Co-operative Association, the Island Vegetable Co-operative Association, the Ontario Cheese Producers Co-operative, the Ontario Bean Growers Co-operative, the Ontario Peach Growers Co-operative, the Ontario Hog Producers Co-operative, the Saskatchewan Honey Producers Co-operative, the Manitoba Honey Producers Co-operative, Maritime Co-operative Services and the United Co-operatives of Ontario. The three western provincial wheat pools and the United Grain Growers Limited should probably be added to this list also since they all act as agents of the Canadian Wheat Board. This latter board differs somewhat from the others, however, being much more in the nature of a public utility board. While the other boards could not have existed in the absence of special enabling legislation, their formation has always been preceded by a special vote of the producers concerned. No such vote was required in the case of the Wheat Board although the degree of popularity of the board has been tested several times during its period of operation. It may be noted also that, whereas all of the co-operatives mentioned above act as selling agents for their respective boards, the Wheat Pools and United Grain Growers are to be classed more as buying than as selling agents of the Wheat Board.

Of the co-operatives listed above, most have been created after formation of the boards they are connected with and for the specific purpose of acting as agents of those boards. On the other hand, some of them were in existence long before the creation of the boards which they serve. In the case of western grain marketing what has really happened is that some of the marketing functions formerly performed by the co-operatives have been transferred to the Canadian Wheat Board. The western grain marketing case differs from the others also in that the Wheat Board has no less than four co-operative agents whereas each of the other boards has only one. Perhaps even more significant is the fact that whereas the other boards place all the agency business in the hands of a single co-operative, the Canadian Wheat Board divides it between four co-operatives and several large private grain elevator companies.

In the case of both the Maritime Co-operative Services and the United Co-operatives of Ontario the agency business performed for marketing boards constitutes only a fraction of the total co-operative business. Along with its many other activities Maritime Co-operative Services acts as the sole marketing agent for both the Nova Scotia and New Brunswick Hog Marketing Boards. Similarly, United Co-operatives of Ontario performs a wide variety of marketing and purchasing functions apart from acting as sole marketing agent for the Ontario Wheat Marketing Board. Indeed its operations on behalf of this board are more or less incidental and of quite recent origin.

The fact that these co-operative-marketing board relationships have increased considerably in very recent years and are now fairly extensive suggests that they represent a definite agricultural marketing

trend. While it is possible to think of them as occupying an intermediate position between the traditional type of co-operative organization and the marketing board type of program, it seems more likely that they simply illustrate the kind of working arrangements that naturally result when marketing board programs are put into effect. It is obvious that a marketing board must somehow arrange to get the specific marketing functions actually performed, including the buying or selling functions. And, while there may be situations where agencies other than co-operatives could be employed to perform these functions, such instances appear likely to be rather exceptional. Nevertheless, it does seem somewhat paradoxical that two modes of operation, one of which has always depended upon voluntary action and the other of which has relied mainly on the ability to exercise compulsory adherence and control, should apparently find it both necessary and possible to combine effectively in practice.

THE ROLE OF MARKETING BOARDS IN CANADIAN FOOD MARKETING

In their attempts to secure better prices and increased marketing efficiency through co-operative action, Canadian farmers have gradually discovered that there are definite limits to what can be accomplished by the organization and operation of co-operatives. In particular, it has become increasingly apparent that the very fact that membership in a co-operative is voluntary makes it impossible to spread the burdens as well as the benefits evenly among all producers of a commodity and to exercise the degree of control which must be exercised if certain kinds of marketing activities and objectives are to be undertaken and achieved. The general situation is well illustrated by the experience of the fruit growers of the Okanagan Valley during the 1920's.

These particular producers had formed a marketing co-operative in 1913 in the hope of increasing their bargaining power and hence their selling prices. For the first few years fairly satisfactory results were achieved. By 1920, however, production had greatly expanded and satisfactory markets were becoming very difficult to find. This situation soon resulted in falling prices. As prices fell more and more growers withdrew from the co-operative and began selling independently. This process soon led to completely destructive competition and ruinously low prices. Finally, in 1923, the co-operative was reorganized and replaced by a new organization. While its membership was purely voluntary, those who joined had to sign contracts agreeing to market their produce through the organization. The hope was that, by getting control of most of the product, the new co-operative would be able to secure higher and more stable prices. These were expected to result from increased bargaining power, from balancing supply and demand more evenly throughout the year and from expanding the market by means of a program of advertising, quality improvement and product differentiation.

Although the co-operative controlled 85% of the total output at the start of its operations its ability to achieve the desired objectives declined with each succeeding year. When it stored fruit in order to market it later in the year, the co-operative thereby reduced the supplies going on the market in the early fall. The reduction in supplies caused rising prices and gave the non-co-operators an ideal opportunity to sell their product at high prices right after harvest and in nearby market centres while avoiding the cost of building cold storage facilities and storing fruit as well as the cost of developing and shipping to more distant markets. Thus, the growers who stood to gain most from the activities of the co-operative were those who didn't join it. As this became evident, and as the storage policy of the co-operative caused immediate market prices to rise, a steadily increasing number of co-operative members started selling independently thereby breaking their contracts. Since each drop in the percentage controlled, reduced the possibilities of achieving the general objectives of the organization, and since the contracts were unenforceable, the growers soon came to the conclusion that they could never achieve the desired ends through voluntary co-operation. This led to the further conclusion

that what was needed was legislation which would permit 100% control of the product. The demand for such legislation became increasingly insistent and finally, in 1927, the provincial legislature passed The Produce Marketing Act. Under this Act a Committee of Direction was set up and given power to regulate the time and place of marketing, the quantity and quality marketed and to set prices. Provision was also made for the collection of a levy to cover operating costs and to set up an equalization fund. The Committee functioned for five years and achieved considerable success in preventing flooded markets and price declines. In 1931, however, the legislation was declared ultra vires on the ground that it aimed at regulating interprovincial trade and that the levy constituted an indirect tax.

Meanwhile the dairy farmers of the Lower Mainland had been pressing for similar legislation. And, when in 1929 the report of a royal commission appointed to study the milk marketing situation recommended pooling and regulated competition, the legislature passed an Act for the Relief of Dairy Farmers. Its purpose was to spread the difference between fluid and manufactured milk prices over all producers in the Vancouver milkshed. After operating for three years this Act also was declared ultra vires on the ground that the levies collected were indirect taxes and hence outside the taxing authority of provincial governments.

Faced with these adverse legal decisions British Columbia producers sought legal assistance from the federal government. While this was happening Canadian farmers generally, having been subjected to falling incomes for several years and especially from the start of the depression in 1929, were looking for something which would prevent declines in their incomes. Furthermore, farmers were coming to believe that their low prices and incomes were due to the fact that the buyers of their products were becoming much fewer and larger. The extensive consolidation of Canadian food products industries which had occurred during the 1920's seemed to lend support to this belief. Added to all this was the knowledge that farmers in several parts of Australia had secured legal authority to control marketing and were making extensive use of this authority and also that similar legislation had been provided in Great Britain in 1931 and 1933. In the light of such developments producers from several Canadian provinces pressed for federal marketing legislation. The result was the passage of the Natural Products Marketing Act in 1934. This legislation provided for establishment of a Dominion Marketing Board with authority to exercise the powers embodied in the legislation and to delegate these powers to local boards which were to undertake the actual administration of marketing schemes. The local boards were given power to regulate the time and place at which, and to select the agency through which, a product could be marketed; to determine the method of distribution and the quantity and quality of the product to be marketed; to form pools; and to levy licence and equalization fees on farmers and processors.

During the eighteen months following passage of the Act no less than 22 marketing schemes were approved and 19 of these were actually put into operation. Toward the end of 1935 the validity of the legislation was challenged and in June 1936 it was declared ultra vires by the Supreme Court on the ground that the constitution of the country

did not give the federal government power to regulate trade within a province. This opinion was confirmed in a Privy Council decision in January 1937. In view of this and in order that schemes concerned with purely provincial trading might continue operating, several provinces passed legislation modeled on the Natural Products Marketing Act. Indeed, British Columbia, anticipating the decision of the Supreme Court, had passed a provincial Act in June 1936. Ontario and New Brunswick passed similar legislation in 1937 and, since then, all other provinces have followed suit. Provincial legislation providing for the organization of marketing boards was passed in Prince Edward Island and Manitoba in 1940, in Saskatchewan in 1945, in Nova Scotia in 1946, in Newfoundland in 1949, in Alberta in 1955 and in Quebec in 1956. Several of these provincial Acts have since been subjected to considerable amendment. To supplement this provincial legislation the federal government, after exercising extensive control over the marketing of farm products for several years under the War Measures Act, passed the Federal Agricultural Products Marketing Act in 1949. This has enabled local boards to exercise the same powers outside their respective provinces that provincial legislation authorized them to exercise within the provinces. A Supreme Court judgment in January 1952 cleared the validity of the Federal Agricultural Products Marketing Act. As for the provincial Acts several test cases have indicated that they are *intra vires* for the most part. There has, however, been considerable doubt concerning the ability of marketing boards established under provincial legislation to collect license fees, levies, or other charges in excess of the amount needed to cover immediate operating expenses without some approval by the federal government in its constitutional field of indirect taxation.

Objectives and Powers of Marketing Boards

Though the provincial marketing laws vary considerably in respect to the powers delegated to the provincial boards, the products eligible for control, the method of establishing local boards and the specific powers granted to the local boards, they all have the same general objective. That objective is the raising of farm prices and incomes by undertaking special types of control in connection with the marketing of farm products. The central point is that before a marketing board can exercise these special types of control it must have authority over 100% of the product. The essential feature of the board method of marketing is that where the majority of the producers of a commodity are willing and anxious to market their product collectively the minority may be compelled by law to fall in line with the wishes of the majority.

In attempting to achieve its general objective of securing higher prices and incomes a board may adopt any one or more of several different kinds of control. As might be expected there is a general tendency to fit the type of control to the particular circumstances. Much depends on the nature of the commodity, the location of the market or markets, the possibilities of product improvement and market expansion, the possibilities of achieving economics through undertaking ad-

ditional marketing functions, the extent and character of buyer competition, etc. Where it is felt that the chief cause of unsatisfactory prices has been a lack of producer bargaining power, a board may concentrate on the attempt to secure better prices through bargaining collectively.

Where, on the other hand, low prices have resulted from the virtual dumping of a whole year's supply on the market during the harvesting season or other limited period, a board may control the rate of market flow so as to balance supply and demand more evenly and thereby secure a higher average price. If the aim is to secure better prices through expanding demand, a board's control may take the form of special advertising and promotional programs. In cases where it is possible to sell the same product at different prices in different markets adoption of a two-price plan may be relied upon. In other cases a board may try to obtain a higher average price by arranging things so that different varieties or grades of a product are sold to different income groups in the same or different markets. In still other cases a higher average price may be sought by changing the proportions of a product which are sold in the fresh and processed state or through the main and by-product outlets. Or again, a board may aim to secure higher producer returns by using its complete control over supply to achieve economics of scale in the performance of marketing functions prior to the actual sale of the commodity. The actual types of control chosen together with the factors determining their selection will become evident as the boards at present in operation are examined. For our present purpose, however, the significant thing about a marketing board is its ability to exercise control. And, regardless of the specific form which the control may take, it is designed to accomplish ends which ordinary voluntary co-operatives cannot achieve either at all or with anything like the same degree of completeness. It may be noted, for example, that attempts at market differentiation, market expansion, or limitation of supplies going to market are bound to be virtually self-defeating and short-lived to voluntary co-operatives for the simple reason that they are certain to result in non-members receiving premiums at the expense of the members.

Actual Extent of Marketing Board Operations

Despite the fact that all provinces are now provided with marketing legislation which permits the will of a specified majority of producers to be exerted over the dissenting minority, most parts of the country have made comparatively little use of it to date. On several occasions in recent years specific marketing board schemes have been suggested, seriously considered or, in some cases, actually voted upon in one or more of the Prairie provinces. The fact remains, however, that the only programs so far developed in these three provinces have been those relating to the marketing of honey in Manitoba and Saskatchewan. In the entire Atlantic area there are only four marketing schemes in operation at the present time although two or three others which have become inoperative are still in existence. The Nova Scotia Apple Marketing Board which was established in 1939 under the War

Measures Act, and which was designed to cope with the particular marketing problems arising from the advent of the war, was dissolved in 1951. In Newfoundland marketing board operations have been limited to a single scheme and a single season. The Prince Edward Island experience has been confined to the operation of a potato marketing board and for a limited period only. In New Brunswick a potato marketing board operated for two years only and, even though it is still in existence, it has not attempted any market regulation since 1954. Indeed, the only boards which have operated with any continuity or for any significant period in the Atlantic provinces are the New Brunswick and Nova Scotia Hog Marketing Boards, the New Brunswick Cream Producers Board and the Nova Scotia Wool Marketing Board. In Quebec, as already indicated, it was not until 1956 that the necessary permissive legislation was enacted. And, while a very considerable number of schemes have been introduced in that province within the past year or 15 months, it is obvious that they could not have had any influence on either producer prices or marketing margins during most of the period being considered by this Commission. The fact is that outside of British Columbia and Ontario, comparatively little use has been made of marketing boards thus far. And even in these provinces they have been used mainly in connection with products which are produced in limited areas and by relatively small numbers of highly specialized producers.

From what has just been said it will be evident that the actual amount of marketing board activity in Canada has been considerably less extensive than the general interest in and discussion of the subject might lead one to expect. The fact is that marketing board operations have so far been limited to certain sections of the country and to a limited number of products within those sections. Moreover, the period of operation of the boards has in several cases been extremely limited. In some instances boards have been dissolved after only a brief period of operation while in a few other cases organization has taken place fairly recently. Finally, a majority of the boards which have existed for longer periods represent a limited degree of board marketing inasmuch as they have not seen fit to exert more than a limited degree of control. Indeed, as will be indicated shortly, most of them confine their efforts to seeking higher prices through collective bargaining. But, while these various limitations do suggest that the type of marketing activities represented by marketing boards is still more the exception than the rule in this country, this does not mean that marketing board development has been inconsequential or that its effect on market prices and margins can be ignored. The truth is that a considerable number of boards have been operating continuously for a good many years and that the total number of boards in existence has continued to show a steady increase.

Types of Boards or Kinds of Board Organization

As already mentioned Ontario and British Columbia are the two provinces in which most of the marketing board development has occurred. At the present time there are 17 marketing schemes or plans operating in Ontario under the Farm Products Marketing Act and three others, in-

cluding the cheese scheme, operating under the authority of the Ontario Milk Industry Act.¹ These schemes may be classified into three general types. Much the most numerous are those which are commonly referred to as negotiating boards since their program involves negotiating prices and contract terms with processors or other buyers. The second type of which there are only two or three may be thought of as the negotiating-agency type. As the name suggests, part of their activity involves negotiating prices and terms of sale, while another part involves the establishment of a marketing agency which may undertake a considerable variety of functions including actual sale of the product and collection of the payment. Finally, there are a few boards of the central selling agency type. The Hog Marketing Board and Fresh Peach Marketing Board are in this third category.

For the most part these three classes or types of boards really represent three different variations in the scope of board activity. Generally speaking, the sphere of activity widens and the number and variety of control measures increase as one passes from the first or negotiating type to the third or central selling agency type. It is significant that in British Columbia where the first Canadian boards were established and where the kinds of control employed have been most diversified, all the boards are of the central selling agency type. In contrast, the programs so far instituted in Quebec are primarily negotiating in nature. As already noted, all three types are found in Ontario.

While all these boards have the same general objectives, their organization and powers, and the nature and extent of the controls which they employ differ greatly. The differences are due partly to the fact that the conditions which characterize the marketing of the products concerned vary widely and partly to the length of time the boards have been operating. Where forward pricing is possible and where the necessity of revising a previously agreed upon price arises only occasionally or not at all, as in the case of fruits and vegetables for canning, the negotiating boards are quite appropriate. On the other hand, where frequent changes in prices have to be made during a marketing season, the negotiation procedure is entirely impracticable. Not only does the negotiation process occupy considerable time but a negotiated price, by its very nature, has to be applicable over a fairly extended period. Hence, in all cases where prices have to be adjusted regularly, a board of the agency type is required. Then again, it is not unusual for boards to organize and operate on a purely negotiating basis during the early years of their existence and to shift gradually to the agency basis as experience is gained and as additional kinds of control appear desirable and feasible. Since negotiating boards require far less capital and represent the minimum degree of interference with the marketing freedom of producers it is only natural that they should be used during the earlier and experimental stages at least. Furthermore, wherever it is felt that the only or major requirement is an improvement in producer

¹ Annual Report of the Co-operation and Markets Branch, Ontario Department of Agriculture for the year ending March 31, 1958.

bargaining power it is natural that the emphasis will be placed on negotiation. In several cases negotiating boards have been selected and maintained simply because producers believed that they would permit the maximum of price improvement with the minimum of interference with producer freedom of action. It is because the central agency boards tend to interfere with this freedom to a much greater extent that they have encountered the greatest degree of producer opposition and become the subjects of general public controversy.

Objects and Operations of Negotiating Boards

Almost all of the Ontario schemes organized in the late thirties and early forties were designed to do nothing more than negotiate prices and terms of sales contracts on behalf of producers. And, while two of them now have selling agents, all the others have continued to confine their activities to negotiation up to the present time. Ontario schemes which today fall into the negotiating category together with the year in which they were organized include the following:

Peach Growers' Marketing-for-Processing Scheme	1937
Pear, Plum and Cherry Growers' Marketing-for-Processing Scheme	1938
Sugar Beet Growers' Marketing-for-Processing Scheme	1942
Seed-corn Growers' Marketing Scheme	1942
Berry Growers' Marketing-for-Processing Scheme	1944
Vegetable Growers' Marketing-for-Processing Scheme	1946
Grape Growers' Marketing-for-Processing Scheme	1947
Soya Bean Growers' Marketing-for-Processing Scheme	1949
Winter Celery Growers' Marketing Scheme	1949

All of these schemes are designed to secure a more favourable deal for producers by making use of the collective bargaining principle. Their operating mechanism involves setting up a committee with powers to negotiate and thereby determine minimum prices, conditions of sale and form and fulfilment of contracts. This committee, which ordinarily consists of six members, three representing the growers and three representing the processors, is called the negotiating committee. The committee normally meets in February or March well in advance of the production season and the actual negotiations continue until agreement is reached. In the event of inability to reach agreement, provision is made for submitting the matter to arbitration, the decision of the arbitrating authority being final.

The actual results of the negotiations are naturally conditioned by several factors. Most of the discussion revolves around the present and prospective supply and demand situation of the product or products concerned. Such things as the extent of the existing stocks of processed goods, the nature of recent consumer demand, the possibilities of alternative sources of supply, the situation with respect to competing products, trends in production and processing efficiency, and the general state of the country's economic health all contribute to

the nature of the views expressed and conclusions reached. Much depends on the relative completeness of the information concerning these various factors possessed by the two interests involved. And, apart from the information itself, there is the question of the relative strength of the participants in making effective use of the information, that is, their relative skill in bargaining. A few examples from actual experience may give a clearer indication of some of the problems encountered, the information that has been used, and the basis on which decisions have been reached.

In connection with the Soya Bean Board's activities it is particularly important to note that there are only a few processors and that Canada produces only about half of the soya beans needed to meet her overall edible oil and meal requirements. A further important fact is that soya beans may be imported free of duty while oil and meal may be imported at moderate tariff rates. This means that the price of soya beans to Ontario processors must always be competitive with the delivered price of imported soya beans and the various soya bean products. In view of this situation the negotiating committee on behalf of the Soya Bean Board has had to decide each year that it was simply not practical to fix a minimum price for soya beans on behalf of the 4,000 Ontario growers concerned. Having reached this decision the Committee has had to recommend that the price paid should be the day to day trading price on the open market. However, the Committee has been able to agree on a number of points apart from the price itself. In respect of the 1957 crop, for example, it was agreed that the processors could not charge producers more than 10¢ a bushel for cleaning, handling and selling the beans. It has not been necessary to apply this part of the agreement since competition between the processors has kept the amount actually charged below the 10¢ figure.¹ It was further agreed that the price paid should be reduced by 2½¢ a bushel for each ½% moisture content over 14% and up to 18% and by 5¢ a bushel for each ½% of moisture content in excess of 18%. These deductions were to cover shrink and drying expenses. Finally, it was agreed that the growers were to be paid in cash on delivery.

Another example of how a board's efforts may prove ineffective with respect to price is provided by the Winter Celery Board's 1957 experience. Because the supply of celery for storage was away below normal in that year and because there was an extremely strong demand for all the supply that was available, the Board simply decided to exempt all storage celery from the regulations of the plan and declare an open market thereby allowing each grower to sell his crop as he pleased. With the special supply and demand situation which existed in this case there was no need felt for any special Board regulations. The result was the temporary suspension of the Board's operations.

A situation somewhat similar to that just described has occurred when a price negotiated during the winter proved to be too low when it came time to market the product. This, of course, can happen if the anticipated supply is larger or demand smaller than the actual supply

1 Annual report, Cooperation and Markets Branch, Ontario Department of Agriculture, year ending March 31, 1958, p. 12.

and demand which eventuates many months later. In such cases the low negotiated price becomes ineffective because the processors bid the price up above the negotiated price level. This happened often in respect of the prices of canning crops during the war and early postwar years. It has occurred also on occasion in more recent years, either because crops proved to be smaller than expected or demand to be stronger than expected, or both. In any such instances it is obvious that the negotiation undertaken by a board does not bring about any increase in the price received by producers. The best that can be said for it is that it has provided the producers with price insurance in the form of a guaranteed minimum. On the other hand it can be argued that the net income of the producers has actually been reduced by the amount of the cost involved in carrying on the negotiation proceedings and otherwise maintaining the board in existence. What all this seems to suggest is that, in order that a negotiating board may have some price raising effect, the negotiated price must also be the price when the product is marketed. While this has tended to be the situation in the great majority of cases, the fact that it does not always happen cannot be ignored.

The Seed Corn Board is of particular interest because of the somewhat unique basis employed for determining the negotiated price. The producer group in this case consists of some 275 hybrid and open-pollinated corn growers in south-western Ontario who specialize in producing corn for seed. In negotiating the price, a base price is established for dried commercial corn and to this a premium is added to arrive at a minimum price for corn for seed. The base price used is the Chicago May corn future daily closing price (subject to the current rate of exchange), averaged for the three months of December, January and February in each year. For example, the base price for the 1956 crop was \$1.32 per bushel while that for 1957 was \$1.24 per bushel.¹ To these base prices in both years a premium of 30% was added. The resulting figures constituted the delivered seed corn price in those cases where the dealer supplied the seed and detasseled the corn. It was agreed that an additional 55¢ per bushel would be paid to those growers who supplied their own seed and detasseled the corn.

A brief account of the operations of the Ontario Pear, Plum and Cherry Board will further indicate the nature of the problems encountered and methods followed by boards of the negotiating type. This board was organized in 1939 and has operated continuously ever since. The operating methods and extent of control have changed little during that period. There are six separate negotiating committees in order to provide separate treatment for two different kinds of pears and cherries, a committee for plums and a committee responsible for determining handling, transporting and selling charges for fruit handled by the dealers.² The membership of the latter committee, along with the three growers, consists of three dealers rather than processors. The six committees negotiate minimum prices, terms of purchase and sale, and standards of quality. During the first few years there was considerable difficulty

1 Annual Reports, Cooperation and Markets Branch, Ontario Department of Agriculture.

2 Minutes of Ontario Farm Products Marketing Board, June 3, 1958.

in agreeing on prices satisfactory to both parties with the result that many of the decisions were made by arbitration boards. Since the end of the war, however, negotiations have proceeded fairly smoothly although occasionally arbitration proceedings have been necessary.

Until 1942 the board had almost no statistical records. In 1943, however, it ordered processors to forward to the board's office the final payment to the growers together with a statement showing the quantities of pears, plums and cherries bought, grades given and payments made, and also a cheque for the licence fees deducted from growers' returns.¹ In 1952 the regulations were amended to permit the board to handle all payments made by processors.

Since the board was organized growers have increased production fairly steadily. Deliveries to processors averaged 16.4 million pounds in the three years 1939 to 1941, whereas they averaged 46.5 million pounds in the three years 1953 to 1955. Because this expansion of production has been accompanied by an increasing demand for most of the products handled it has been possible to keep prices at levels fairly satisfactory to both parties. Since the processing market is far less troublesome and expensive than the fresh market from the growers' standpoint, the growers have not tried to raise prices too much lest processors be discouraged from moving large quantities of fruit. On the other hand processors have been willing to pay prices which they felt would be high enough to encourage a desirable expansion of production. From the processors' standpoint an important factor when determining prices has been the fact that the cost of the fruit is a relatively small part of the cost of the processed product. To a considerable extent the kind of producer and processor attitudes towards pricing just mentioned have been present in respect of several of the negotiating boards.

While the Ontario Asparagus Marketing Board combines the negotiating with the agency basis of operation, its activities are actually very similar to those of the strictly negotiating boards. Before it was established in 1937 a voluntary growers' co-operative was in existence and this co-operative became the board's marketing agency. In this case the negotiating committee determines not only the minimum price but also the total quantity to be sold.² Once these matters are agreed upon the co-operative as the board's agency arranges for distribution of the total tonnage on an equitable basis to the various processors as well as the basis of delivery between grower and processor. It also handles all payments and other business dealings on behalf of the growers.

The Asparagus Board which represents the interests of 800 growers is only concerned with the part of the crop which goes to the processors. The fresh market is considered the premium one and the prime purpose of diverting product to the processed market is to ease the pressure on the price of fresh asparagus. In this connection it is of interest to note that, for several years the licence fee collected from the growers was used to subsidize the export of canned asparagus to the

1 Minutes of Ontario Farm Products Marketing Board, July 23, 1943.

2 In the case of several of the other Ontario boards the processors agree to pay the negotiated prices for the amount that is produced on a specified number of acres. The production is ordinarily undertaken on an acreage contract basis between processors and the individual growers.

larger United States market.¹ A unique feature of the Asparagus Board program is an agreement by the growers to cease cutting when total orders have been filled. By this means supply is adjusted to demand.

Outside of Ontario about the only boards of the negotiating type which have operated until recently have been the Manitoba and Saskatchewan Honey Marketing Boards. While both these boards have been granted quite wide powers of control over the movement and sale of the product, their activities have so far been confined to the fixing of prices after consultation with the trade. As mentioned earlier, Quebec's legislation providing for the organization of marketing boards was not passed until 1956. The legislation differs in several respects from that of the other provinces. For one thing it is unique in providing that levies collected by and paid to a producers' marketing board cannot exceed the amount required for administrative expenses. Deductions for any other purpose are strictly forbidden. Another significant difference is that in Quebec it is possible to have separate marketing board plans for each particular market within the province and even for each separate enterprise within each market. This is in marked contrast to the situation in other provinces. In the third place the Quebec Act requires that no marketing plan can be approved unless 75% of the producers concerned, representing 75% of the product, have voted in favour of it. The corresponding percentages in the other provinces are very much lower than this. Another rather distinctive feature of the Quebec Act is the provision whereby sales made by a producer directly to a consumer or to a retailer who operates not more than three outlets shall not be subject to the regulations of any producer marketing board. Finally the Quebec Agricultural Marketing Board (the government board) retains most of the responsibilities which under the other provincial Acts are vested in the producers' boards. While regulations and penalties are similar to those found elsewhere, enforcement of them is in the hands of the government board, not the producer board, as is generally the case in other provinces. Moreover, the Quebec program differs from the others in that it specifically purports to operate in the general interest as well as in the particular interest of agricultural producers.

While the Quebec Agricultural Marketing Board has been given almost unlimited authority in respect to marketing, a major part of its program is concerned with the creation and operation of so-called joint marketing plans. At any rate this has constituted a large part of its activity to date. A joint marketing plan is the means whereby Quebec producers can require commercial buyers to negotiate with them in respect to the marketing or sale of their products. Between April 1956 when the government board was appointed and September 1, 1958 no less than 30 joint plans had been approved while the number was expected to reach 40 by the end of the year. At September 1, 1958 ten agreements in respect to minimum prices and terms of sale had been completed and 11 others were being negotiated.

Five producer boards representing 4,272 producers were negoti-

1 See article entitled "Experience with Provincial Marketing Schemes in Canada" by M.W. Farrell in Journal of Farm Economics, November 1949, p. 621.

ating with five large dairy establishments regarding the sale of milk for the manufacture of concentrated products. Some 5,760 fluid milk and cream shippers supplying 52 dairies in 12 major markets were grouped under 15 different producer boards. Four agreements regarding prices and terms of sale had been completed and eight others were being negotiated. One producers' board was negotiating with 43 canners on behalf of 2,000 tomato growers. Another board was negotiating the sale price of fresh celery. Still another board representing 2,289 maple syrup producers was negotiating with ten buyers. As the result of negotiations carried on by various producer boards over a 12-month period, it was claimed that price increases had given producers an additional \$1,200,000.¹ While results of Quebec Marketing Board operations are too recent and short-lived to have had much effect on producer prices or marketing margins during the Commission's period of study, the fact that so much reliance is currently being placed on this method of raising farm prices and incomes is of special interest and importance in any study concerned with pricing and marketing arrangements.

Negotiating Boards, Producer Prices and Marketing Margins

Having noted something of the general character and mode of operation of negotiating boards the next step is to offer some appraisal of their possible effects. In doing so it is necessary to remember that these boards represent an attempt to gain price and income advantages by substituting collective for individual bargaining. Prior to the organization of the boards large numbers of small scale producers had to bargain individually with processing firms which were becoming very large and few in number. Moreover, in many cases producers had to depend on selling the larger part of their output to the processors since cost of transporting to larger consuming centres placed early limits on the proportion that could be marketed in the fresh form. In addition the highly perishable nature of many of the commodities made it difficult to postpone sale in the hope of securing a better price. Under these circumstances it is not surprising that producers felt themselves in a relatively weak bargaining position and firmly believed that their selling prices reflected this weakness. Other things being equal it would seem that the bargaining power of producers must have been strengthened considerably by using negotiating committees. For one thing adoption of the collective bargaining method meant that processors could no longer play one producer off against another. In the second place one would expect that the bargaining capacity of the producer members of negotiating commodities would be somewhat greater than that of the average individual producer. Producer members of a committee would ordinarily be selected, at least in part, on the basis of their general marketing experience and knowledge and their recognized skill as bargainers. There is little doubt also that producer members of committees have been able to add appreciably to their supply of

1 Information supplied to the Commission by officials of the Quebec Agricultural Marketing Board.

market information. Collection of statistical data relative to their particular products has undoubtedly placed them in a better position to estimate the significance of price-determining factors. In this connection it is important to note that many of the Ontario boards have been able to make use of special cost of production data in connection with their price negotiations. From 1946 cost studies of many of the products being handled by these boards have been undertaken, first by the Agricultural Economics Department of the Ontario Agricultural College and later by the Farm Economics Branch of the Provincial Department of Agriculture. The results of these studies have been used extensively for price negotiation purposes.

As for the processors it must be remembered that they only agree to buy a limited amount at the negotiated price. Normally they limit the quantity by agreeing to take only the produce of a stipulated acreage. This means that theoretically they could agree to pay a fairly high price for a small quantity with the idea of passing this higher price on to the consumer. In practice, however, they are unable to do this to any significant extent because of what would happen to the demand for the products. Specifically, there are three limitations to the possibilities of following such a policy. In the first place, if the consumer price is raised too much, other products in the same general category will be substituted. In the second place, there is the even more important fact that products which are sold at negotiated prices almost always have to compete with similar products produced and processed in other areas. Finally, in those several cases where a product has more than one outlet, the policy of paying a high negotiated price for a limited quantity may force producers to unload a much larger part of their total production on the second or alternative outlet. And, if demand in that outlet happens to be inelastic the grower's total income from both outlets may well be reduced. Such a result apparently occurred in respect of peaches a few years ago. The negotiated prices for the processing market were apparently kept at relatively high levels for several years with the result that more and more peaches had to be disposed of on the fresh peach market. This eventually caused prices in the fresh market to fall so low that processors threatened to buy their requirements for canning from the fresh market instead of agreeing to buy at negotiated prices. It was this situation which caused producers to form the fresh peach marketing board in 1954.¹ A similar situation might well develop in connection with other fruits and vegetables and this possibility will tend to place limits on producer pressure for higher prices during negotiation proceedings.

All in all the mere fact that negotiating boards have made for greater equality of bargaining power between the two parties has probably meant some improvement in producer prices. If this has been the case, and if, for reasons explained above, it has been impossible to

1 See The Development of Producer Marketing Boards in Canadian Agriculture by L.E. Poetschke and Wm. Mackenzie, page 68. Also Annual Reports, Cooperation and Markets Branch, Ontario Department of Agriculture, for years since 1954.

pass any or all of these higher prices on to consumers, operation of the boards may have indirectly narrowed the spread to some slight extent. However, it does not appear possible to determine whether or not this has, in fact, occurred. The difficulty here is that there are no means of determining what either the producer or consumer prices would have been had the boards never existed. Nor is it possible to determine what part of any changes in consumer prices of processed foods has been due to changes in the prices of the fruits or vegetables or other farm products which formed the raw material and what part has been due to changes in costs of containers, labour or processing costs in general. While the boards have probably strengthened producer bargaining power, it is unlikely that it is as strong as that of the processors. Collective bargaining in itself is not sufficient to guarantee equality of bargaining power.

Whatever their effect on producer prices and marketing margins, a detailed examination of the sales contract terms which have accompanied the various negotiated prices suggests that the boards have contributed significantly to the establishment of more distinctive and effective grades as well as the price differentials between grades. In this way they have helped to improve quality and to reward quality production.

Finally, it is necessary to deduct the costs entailed in operating the boards in any attempt to calculate their economic contribution. The fact is that all of the boards have collected deductions from producers' returns, usually in the form of a licence fee. It is also true that, in some cases, the amount deducted has exceeded the costs of operation.¹ There are few cases, however, where either costs or deductions constitute any significant amount. Normally the costs involved in operating the negotiating boards have been extremely small.

Operations of Various Boards of the Agency Types

As stated earlier the ordinary negotiating type of board is much the simplest and cheapest. On the other hand the boards which seek to increase price and income in a wider variety of ways must undertake a corresponding variety of marketing activities and incur heavier financial outlays. A brief resume of the activities of some of these boards will indicate the general nature of the methods used, the problems encountered and the results achieved. First consideration may be given to two Ontario boards which have placed major reliance on use of the two-price technique in their attempt to raise average producer prices.

The Bean Growers' Marketing Board which operates on behalf of some 7,000 growers in five south-western Ontario counties was organized in 1944. At first it confined its activities to negotiating prices and picking charges with the 15 dealers who bought from the growers and sold

¹ The financial statements of the 1957 fiscal year show that almost all of the boards have accumulated some surplus.

either to processors or in markets in various parts of Canada and beyond. However, in 1947 a marketing agency was set up to handle crop payments and supervise the distribution of surplus beans. A deduction was made from the price paid by the dealers and the funds so collected were used to pay the difference between a negotiated price and any lower price at which beans were sold on the open market. Any money left over after completing this program was returned to the growers at the close of the season. In 1951 a co-operative company was formed to permit erection of a bean-picking machine. Shortly after that the co-operative began handling and selling beans as a dealer and in 1953 it became the selling agent of the board. Since then it has been acting as a dealer, has been doing custom picking for the other 15 dealers and has handled all payments to growers as the board's marketing agency. In addition it has administered the export subsidy fund. It has used this fund to buy beans whenever the market price dropped below the price which growers and dealers regarded as reasonably satisfactory and which is known as the annually negotiated price. The beans so bought were later sold wherever markets could be found. Many were exported to the United Kingdom or elsewhere. Any funds not required to remove the so-called surplus beans were returned to the growers on the basis of their contribution at the end of each season. During 1958 the co-operative and the board signed a purchase and sale arrangement authorizing the Grain Marketing Division of United Cooperatives of Ontario to act as consultant and agent in respect of both domestic and export sales.¹ This arrangement was to continue until August 15, 1959, the end of the 1958 crop year.

The amount of product taken off the market at the negotiated price and resold at the lower open market price has varied widely from year to year depending on weather conditions, crop yields and the general demand situation. For example, a fee of 17¢ per bushel was collected from producers and used to subsidize the sale of 100,000 bushels of the 1956 crop whereas the corresponding figures in 1957 were only 8¢ per bushel and 50,000 bushels.² These figures indicate that it has been possible to sell by far the larger part of the total annual crop at a price considerably above that paid on the open market. Stated otherwise, it is apparent that, by pursuing this two-price policy, the board has increased appreciably the average price received for all beans sold. And it has increased even more the price received for the large percentage of the beans sold in the Canadian market. It is, of course, this latter fact which has special significance for this Commission.

Another board which in recent years has operated on a fairly similar principle is the Ontario Cheese Marketing Board. This board was the first one to be established under the 1937 Act. For the first several years its efforts were directed towards increasing the effectiveness of the cheese board (auction) method of selling. Cheese boards or

1 Annual Report of Ontario Bean Growers' Marketing Board for year ending December 31, 1958.

2 Annual Report, Cooperation and Markets Branch, Ontario Department of Agriculture, year ending March 31, 1958, p. 9.

local auction markets had been in operation for many years. Cheese from a group of factories would be brought to a central point in the area where it was sold by auction to representatives of the trade. By degrees, however, the practice developed whereby each buyer secured a large part of his requirements directly from each of a number of factories with the result that less and less of the cheese was offered for sale on the boards. In 1937, when the Cheese Marketing Board was organized, only about a third of the cheese was being sold on the boards.¹ In view of this situation the Marketing Board instituted a program which required all cheese, with certain limited exceptions, to be sold through the boards. The assumption was that this would increase the number of buyers at the auctions and that the more numerous buyers would result in keener buyer competition and hence higher prices.

During the early post-war years the export price of cheese going to the United Kingdom market was set by annual contracts arranged jointly by the federal government and the British Ministry of Food.² Canadian producers became dissatisfied with the prices stipulated in these contracts and felt that a cheese marketing board, if permitted to handle the cheese, could improve the timing of export sales in such a way as to reduce supplies and thereby raise prices in the domestic market in the spring months. Indeed as early as 1946, in response to the Board's request, a corporate agency, Ontario Cheese Producers' Association Limited, was authorized to collect licence fees, handle all sales of Ontario Cheese and collect all payments from buyers. An attempt at central selling by this agency, however, encountered almost immediate buyer opposition with the result that central selling was discontinued and the cheese board system restored.

By 1950, however, producer dissatisfaction with the terms of the export contracts resulted in insistent demands for further control. As a result the provincial marketing board authorized the corporate agency to market all the cheese sold outside the province and stipulated that all other sales should be made through six exchanges which replaced the old cheese boards. In addition provision was made for establishment of a negotiating committee composed of five producers and five buyers. This committee established minimum prices at which all cheese was to be sold. From then on any cheese not purchased at or above this minimum price was to be bought up by the agency of the marketing board at a minimum price.

In 1951 the board built, with government assistance, a modern cheese cold storage and curing plant at Belleville capable of holding five or six million pounds of cheese. About three years later a second curing and storage warehouse of about the same size was built at Winchester in eastern Ontario. In 1951 the board inaugurated a two-price

1 For a more complete account of the origin, methods and history of operation of cheese boards see Dairy Industry in Canada by Ruddick, Drummond et al published by Ryerson Press 1937, pp. 158 to 162 inclusive.

2 It is important to note that in these years considerably more than half the cheese was exported and almost all of it to the United Kingdom.

system and an equalization pool. The aim was to obtain a higher price for most of the cheese in the domestic market where demand was relatively inelastic and a lower price in the export market for the balance. A contract with the United Kingdom was negotiated under which 25,370,601 pounds of cheese were exported at 32¢ a pound. Then the negotiating committee established a minimum domestic price of 36¢ a pound. In order that all producers might share equally in the total returns received in the domestic and export markets the domestic and export prices were blended. The funds required for this purpose were obtained by charging all factories a licence fee of 3¢ per pound. Thus the blended price to all producers was established at 33¢ a pound.

While this program increased the returns of producers in 1951, the high Canadian price induced importation of over eight million pounds of cheese from New Zealand and this tended to reduce the price that could be obtained for cheese in Canada in 1952. However, the board has continued to conduct a two-price plan since that time. Minimum Canadian prices have been set by the negotiating committee and the board has taken up any cheese that could not be sold on the exchanges at these prices. The finances required for the buying programs have been obtained by using bank credit advanced on the security of federal and provincial government guarantees. The difference between the negotiated price paid by the board's agency¹ and the lower price received on the export market has been made up by collecting levies on all cheese sold. Negotiated prices have varied considerably from time to time depending upon changes in production, the possibility of being able to sell in the United Kingdom, and the extent of bank guarantees and price supporting arrangements with the federal and Ontario governments. Similar variations have existed between the negotiated Canadian price and the price received for the exported portion. As a consequence the benefit derived by producers from the two-price system has varied considerably from year to year. There is every indication, however, that some and probably considerable benefit was obtained throughout the period since the system was instituted. Since the elasticity of demand for Canadian cheddar in the United Kingdom was considerably greater than in Canada it was quite possible to increase producers' returns by disposing of part of the production in the United Kingdom.² But while the program may have benefited producers it certainly resulted in Canadian consumers being discriminated against in the matter of price.

It is important to note that the actual costs involved in carrying through the board's program have to be deducted before the net gain to producers can be calculated. That these costs have been very considerable can be seen by examining the most recent statement of the marketing operations of the board's marketing agency. This statement

1 The corporate agency, the Ontario Cheese Producers' Association Limited, was replaced by a co-operative in 1956.

2 For detailed consideration of the demand elasticity during these years see "The Marketing of Ontario Cheddar Cheese" an unpublished Ontario Agricultural College MSA thesis written in 1958 by M. Roytenberg, Chapter 6.

which follows on the next page, shows that the agency had to perform extensive marketing functions and that the cost of some of these, such as storing, financing and sales promotion, was quite large. It should also be realized that some of these costs would have been much larger had not various forms of government assistance been provided. Government guarantees undoubtedly reduced bank interest and government grants certainly reduced the cost of providing storage facilities.

Apart from the monetary cost there are other factors which have been encountered and which have conditioned both the mode of procedure and degree of success of the board. For one thing the board's agency has had considerable difficulty in getting and supplying the particular quality of cheese desired by British buyers. Even more difficult has been the problem of providing cheese in the quantities and with the degree of regularity desired by foreign purchasers. Acquisition of storage facilities, however, has helped greatly in regulating both the quality of the product and time of shipment. Another problem has been the uncertainty of finding foreign markets, due partly to expansion of production in Britain itself and partly to the British government's lack of dollar exchange. Still another problem has been in limiting the importation of cheese from the southern hemisphere which naturally tended to result from the board's policy of keeping Canadian cheese prices at a high level. In this connection it is significant that in June 1956, after prolonged negotiations, the board managed to have the importation of cheddar cheese placed under the Import-Export Licence Act. Since that time no importer could bring in this commodity without an import licence from the Department of Trade and Commerce. Finally, and very importantly, there is the fact that the price raising efforts undertaken by the Ontario board have benefited the cheese producers in Quebec at no cost to themselves and induced a rapid expansion of production in that province. As production expands it becomes necessary to remove a larger proportion of the product from the Canadian market in order to support the domestic price at a given level. It would thus appear that the need to increase the amount exported is likely to occur at the very time that export markets are more difficult to find.

Very different from the operations just discussed are those of the New Brunswick Cheese Marketing Board which has been operating since 1939. Prior to its formation cheese was marketed on a cheese board auction like those already described in the case of Ontario. Since, however, there were only a few factories, all the cheese was sold on the one auction. A representative of each factory accepted or rejected bids for its particular cheese. Auctions were held every two weeks from May to November. The cheese was graded at the factory by a provincial inspector who kept a record of the amount graded and the grades at each factory. This information was supplied to the trade representatives at the auction.

From the producers' standpoint this system had several weaknesses. Because storage space was insufficient during peak production periods, factories were often forced to accept prices below those ruling on the Toronto and Montreal markets despite the fact that Maritime provinces constituted a pronounced cheese deficit area. Dealers made the most of the producers' weak bargaining position and it was commonly alleged that

ONTARIO CHEESE PRODUCERS' CO-OPERATIVE LIMITED STATEMENT
OF 1957 CHEESE MARKETING OPERATIONS FOR THE PERIOD FROM
APRIL 1, 1957 TO DECEMBER 31, 1958.

EXPENDITURES:

<u>Cheese Purchased (200,537 boxes)</u>	\$ 6,169,461.81
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Direct Expenses:

Cartage	\$ 69,962.05	
Handling	50,751.36	
Insurance	21,879.04	
Storage	216,592.38	
Waxing	<u>22,891.63</u>	\$ 382,076.46

Sales Expenses:

Salaries	\$ 10,300.00	
Travelling	<u>1,056.42</u>	11,356.42

Promotion of Export Sales:

Export Subsidies	\$ 49,666.89	
Export Freight and Expenses	<u>28,214.32</u>	77,881.21

Administrative and

General Expenses:

Audit and Legal	\$ 3,140.00	
Bank Charges and Interest	280,751.62	
Management Salaries	4,413.19	
Office Salaries	8,336.85	
Rent	410.00	
Telephone and Telegraph	2,546.01	
Office Expenses	752.30	
Travelling - Secretary-Treasurer	1,859.84	
Directors' Fees	260.00	
Directors' Expenses	<u>1,150.64</u>	303,620.45 <u>774,934.54</u>

TOTAL EXPENDITURES

\$ 6,944,396.35

DEDUCT: Proceeds from Sales
of Cheese (171,012 boxes)

5,191,957.78

NET AMOUNT EXPENDED TO DATE

\$ 1,752,438.57

they agreed on a low price before entering an auction. It was when the prices paid dropped to particularly low levels during the 1930's that steps were taken to form a marketing board.

The board's chief activity is the operation of storage facilities at St. John. Cheese goes directly from the factories to these facilities where it is graded and held until satisfactory prices are obtained. By spreading sales over the entire year the board has made real progress in eliminating seasonal price variations. In particular it has made it unnecessary for producers to accept very low prices during the season of peak production.

In order that producers may receive money regularly even though cheese is often kept for several months before being sold, the board collects fees which are used to make an advance payment. This initial price is based on the current price and market outlook. If the cheese is sold for some higher price later on a supplementary payment is made. Instead of the cheese being sold at auction with representatives of the several factories present, it is now all sold by the marketing board's agent. This man meets monthly with the board's directors and, after all available market information is considered, a minimum price is set. All cheese is then sold by the agent at one price to all buyers.

Whether the board's program has resulted in any reduction of retail prices may be seriously doubted. It seems reasonably certain, however, that it has resulted in significant increases in producer prices. One would expect that the extra income resulting from the more orderly marketing and improved bargaining power would considerably exceed the costs involved in storing plus the general costs of administering the board.

Hog marketing boards have been operating in New Brunswick since 1951 and in Nova Scotia since 1953. The purpose or purposes are the same in both cases. Their main function has been to guarantee the continuance of the system of shipping and selling already in existence. In the 1920's, in an effort to improve the quality of hogs, the federal government paid quality premiums. However, in the Maritimes it was found that the system of marketing through drovers prevented premiums from reaching producers. To overcome this difficulty the government began encouraging the formation of producers' shipping clubs. These clubs were supervised by the federal Livestock Branch until 1927 when the Maritimes Livestock Marketing Board was formed. Before long this board extended its operations and was transformed into a general producer co-operative now known as Maritime Co-operative Services Limited.

Since the shipping clubs did not eliminate all the independent drovers and shippers the governments of New Brunswick and Nova Scotia in 1936 agreed to pay a bonus on premium hogs if shipped through recognized marketing organizations. Since independent shippers could not secure this premium it was not long until over 95% of the hogs were being marketed co-operatively. During the war and post-war years, however, hog production increased and the premium payments became more and more burdensome to the provincial governments. In 1951 the New Brunswick government announced that it was discontinuing the payments. Since

these payments were the means of guaranteeing support to the co-operative something had to be done to replace them. The result was the immediate establishment of a New Brunswick Hog Marketing Board. A similar board was formed in Nova Scotia in 1953 even though the premium payments were continued in that province.

Since a major reason for the boards was the desire to maintain Maritime Co-operative Services in a healthy condition it was only natural that both boards chose this co-operative as their selling agency. Both boards provide for the division of the provinces into districts within which the producers are grouped into shipping clubs. Each club has a secretary who arranges for the collection and delivery of the hogs to the co-operative. When sale is completed the co-operative makes out a statement for each farmer showing all marketing costs entailed. These statements along with cheques for the balance are mailed to the shipping club secretary who in turn sends them to the farmers.

So far as one can see the boards' chief objectives are to promote the operation of shipping clubs as a means of maintaining and improving hog quality and to ensure that producers get whatever bargaining advantages and other marketing efficiencies can be obtained by selling through a single co-operative agency. The only control exercised by the boards is the requirement that hogs must be sold through the co-operative selling agent. All New Brunswick producers wishing to sell to packing plants that are federally inspected must sell through the agency. The same applies to all Nova Scotia producers wishing to sell to packing plants which buy over 200 hogs per month. Inasmuch as the percentage being marketed by the co-operative was at least as large before as after organization of the boards, it is difficult to see how board operation has exerted any additional influence over either producer price or general marketing efficiency.

The situation which caused development of the Ontario Hog Marketing Board was entirely different from that just described. Ontario producers were primarily concerned with the need for price rather than quality improvement. They had become more and more convinced that buyer competition had well-nigh disappeared and that the prices which they received reflected this lack of competition among the buyers and lack of bargaining power on the part of producers. The practice whereby hogs were taken directly from the farms to the packing plants by truckers had replaced all but a small part of the selling on the open market and producers contended that this had left price determination entirely in the buyer's hands. In view of these developments producers felt that they were being paid prices which were far below the true competitive level. In their opinion what was needed was elimination of direct marketing with its trucker-packer relationships and its replacement by some system which would put producers in a position where they could force packers to compete actively with one another for their hog requirements. In short, what they wanted was either a full-fledged restoration of the open market type of selling or a selling technique which would give at least equivalent results.

Organized in 1945 the Hog Marketing Board first tried to improve prices by means of negotiation. A negotiating committee representing producers and packers was formed and from 1946 to 1951 price negotiation was attempted. During this period also the board collected licence fees from producers and added greatly to the strength of the provincial hog producers' association. However, despite these developments, marketing methods remained unaltered. And, when in 1951 the processors announced that they would not negotiate in respect of prices, the negotiating committee was disbanded. As a result of this experience the board decided to establish a marketing agency. After prolonged discussions with the livestock commission firms operating on the Toronto stockyards a private company representing these firms and known as United Livestock Sales Company was formed and began operating as the board's selling agent in February 1953. This agent was authorized to establish prices, to sell and direct the movement of hogs and handle payments to producers.

Between February 1953 and March 1955 the agency tried to improve the price situation but met with limited success. Since it was only able to exercise control over the 10% of the hogs that were marketed via the stockyards, its bargaining power was limited. It was further limited by the packer practice of paying bonuses to truckers to induce them to bring hogs from more distant areas. This practice naturally tended to reduce still further the percentage of hogs going to the stockyards. In view of this situation the board decided that further changes in the marketing system were necessary. As a first step the private company was replaced as sales agency in April 1955 by the Ontario Hog Producers' Co-operative which was specially organized for the purpose. Following this a program calculated to eliminate the direct marketing and packer-trucker arrangements was instituted. Assembly yards were gradually established at several points in the major hog-producing areas. Although establishment of these yards was authorized in 1956 for the area covered by Grey and Bruce counties, it was not until after the Supreme Court of Canada rendered its decision regarding the legality of the Ontario Farm Products Marketing Act and the regulations of the Hog Producers' Marketing Board in January 1957 that the board felt free to proceed with its assembly yard program. Legal technicalities further delayed actual issue of the necessary orders until September 1957. Since then the number of assembly yards and the counties served by them has been rapidly increased and at present the bulk of the province's hogs are required to be taken to one or other of these points and held there until sold by the board's selling agency. They are then transported at the expense of the packing plants which buy them.

Supplementing the assembly yards are the activities of the selling agency which operates from a central headquarters in Toronto. The hogs are sold by telephone to the highest bidder. Agency headquarters has teletype connections with the assembly yards. It also has daily contact with all major markets across Canada and two major United States markets. After examining prices being asked for various pork cuts in retail stores, taking note of the previous week's hog kill, expected hog delivery for the coming week, and reviewing hog prices at major Canadian and United States markets, the sales agency establishes an asking price. The various packers are then contacted by telephone and bids are solici-

ted for lots of hogs of various sizes and in various assembly points across the province. The usual trade haggling follows until finally a price is agreed upon and a sale made. In the process the agency is able to play off one buyer against another. According to board officials the main principle followed is that the processor offering the highest bid will get the hogs.

Just what effect this method of marketing has had upon the price of hogs and the producer's net returns is a much-debated question. It appears impossible to either prove or disprove that it has increased the selling price. Comparison between Ontario prices and those in other parts of Canada, before and after the advent of the agency method of selling, are, at the very best, subject to many indeterminate variables. It seems doubtful also whether the mere fact that the board has control of supply and is able to play off one buyer against another necessarily results in increased competition between the buyers. If, as the producers commonly allege, the larger packers actually agreed tacitly or otherwise to refrain from active bidding in the pre-board days, there seems no reason why they could not continue to do so now if they were so inclined. Furthermore, the mere fact that most of the packing plant capacity is represented by four of the largest firms would seem to make it relatively unnecessary for these firms to bid very actively. Since they possess so much of the processing capacity they know that they are certain to get a large percentage of the hogs sooner or later whatever their price bids. However, the new system undoubtedly makes it more possible for the fairly numerous small packers to get hogs than under the former set-up. To the extent that the large packers refrain from bidding altogether, or until close to end of each market day, the small packers will get hogs since they will obviously be the highest if not the only bidders. And if, as appears to be the case, the small packers are now securing a larger percentage of the hogs than previously, the larger packers may feel impelled to bid somewhat more keenly in order to get something like their accustomed supplies. Such action would, of course, have some price-raising effect. Apart from the above considerations, however, there is the important fact that selling is now being done by people who have specialized bargaining skill and who are acting on the basis of very complete market information. This in itself should make for considerably increased producer bargaining power and correspondingly higher prices. On the other hand it is still true that producers are much less able to delay their sales than packers are to delay their purchases. Hogs must still be sold when they reach certain weights and degrees of finish. This fact tends to weaken the seller's bargaining power.

Whatever the effects on prices and incomes may be today, they were practically non-existent during most of the period of special concern to the Commission. Nevertheless, this particular board and its program are of very real interest from the standpoint of future as well as present marketing policy. The uniqueness of the program and the fact that it affects the welfare of such a large number of producers have made it easily the most controversial one in eastern Canada.

The British Columbia Experience

Without question the most thoroughgoing Canadian attempts to secure farmer benefits through controlled marketing have taken place in British Columbia. Whereas marketing boards in other provinces have sought to raise farm prices and incomes by negotiating minimum selling prices, strengthening producer bargaining power or following a two-price plan, the British Columbia boards have used a wide variety of control methods and most of them contemporaneously. This has been particularly true of the British Columbia Fruit Board. This board has controlled such matters as the time and place of marketing, the quantity and quality of the product marketed, the percentages of the product marketed in the fresh and processed forms, the nature of the containers used, etc. It has also sought to expand demand by undertaking elaborate advertising programs and developing new types of processed products through extensive research. It has also undertaken large scale processing operations and performed its own brokerage functions so far as western Canada is concerned. In short it has made the most extensive use of the special legislation authorizing the creation and operation of marketing schemes of any board in the country.

Prior to 1939 the board's only method of influencing prices consisted in regulating the flow of products to market. In that year, however, a one-desk deal or central selling scheme was instituted. Operation of this plan has meant that all the selling has been done by B.C. Tree Fruits Limited, the board's selling agency, and that all sales returns to growers have been pooled. The agency does all the selling and controls and directs the movement of the products but never takes actual physical control of them. This control is maintained by means of three-way contracts between growers, shippers or packing houses and B.C. Tree Fruits, the central selling agency. The essential point in these contracts is that growers and shippers give the agency the right to sell all the product and to conduct pools to handle all returns.

In 1946 the board decided to enter the processing business and purchased four processing plants. The purpose of this was two-fold. One objective was to make use of what would normally be waste fruit, the cost of sorting of which had to be added to the cost of packing good fruit. The second purpose was to take lower grade fruit off the fresh fruit market and thus secure better returns for the better grades which remained.

The various types of control undertaken by the B.C. Fruit Board are said to have resulted in a number of savings. These are supposed to include savings resulting from effecting low and standardized brokerage fees, economic allocation of shipments due to reduction of the so-called re-shipment problem, development of a standard policy in respect of claims, and using cold storage facilities to the best possible advantage. Apart from making savings, however, the board's main concern has been with the possibility of raising the average price obtained. This aim has been sought through applying the principles of orderly marketing, centralized selling by specialized and well-informed salesmen, product differentiation and price discrimination. The board's

ability to apply these principles stems mainly from its control over 100% of the product. This singleness of control makes it possible to decide when or where to sell, at what prices, in what forms, etc.

While it is obviously impossible to calculate any effect which the board may have had on the marketing spread in many areas where British Columbia fruit is sold, it has seemed to us that there might be at least some possibility of determining whether the board's operations had exerted any influence on the spread in British Columbia itself. Whereas in other areas such as central Canada, the United States and the United Kingdom, the price spread for apples relates to apples which come from several different producing regions, most apples sold and consumed in British Columbia are produced in the province and marketed through the B.C. Fruit Board. In view of this situation, therefore, we have examined certain aspects of the board's pricing policy. More specifically we have looked at the price lists issued by B.C. Tree Fruits Limited during the last few years. These lists are put out quite regularly, sometimes every two or three days. The prices shown on these lists are f.o.b. shipping point prices in British Columbia unless specifically stated to be otherwise. The significant thing about these prices is that they tend to vary from one market area to another.

The prices at which sales are made to British Columbia and Alberta are normally somewhat higher than those charged to buyers in Saskatchewan, quite significantly higher than those charged buyers in Manitoba, and very considerably above those charged buyers east of Fort William. The actual price differences appear to vary rather markedly from one part of the season to another, from year to year, from variety to variety and from grade to grade within a variety. At times only two prices are shown, one for all of Canada west of Fort William and one for Canada east of there. At other times four different prices are shown, one for British Columbia and Alberta, one for Saskatchewan, the Pas and Flin Flon, one for all Manitoba points west of Winnipeg and a fourth for Winnipeg and points east to Fort William and Kenora. At still other times additional prices are quoted for points east of Fort William and for the British Columbia Coast as distinct from the interior of British Columbia. Generally speaking the prices become lower as one goes from west to east, although there actually are times when prices are uniform for all of Canada. To illustrate the extent of these variations it may be noted that during most of the 1954-55 marketing season extra fancy McIntosh (Standard Box and Tray Pack 80S-88S) sold for \$2.75 a 45-pound box to buyers west of Port Arthur and \$2.20 to buyers east of there. In the same way, during about three months of the 1955-56 season a box of these same apples sold for \$2.75 in British Columbia and Alberta and \$1.95 in Winnipeg and as far east as Port Arthur and Kenora. What price was charged east of there is not shown, presumably because it was not found possible to meet the competition of Ontario, Quebec and other eastern producers in that year of unusually large supplies and low prices. The point to be noted is that the prices charged in British Columbia and Alberta, where it is not necessary to fear competition from eastern Canadian growers, are usually somewhat higher than those charged further east. In order to sell to eastern Canadian buyers, B.C. Tree Fruits must quote a price that will permit the buyer to pay the cost of transporting the product from British Columbia and sell it in competition with the

apples produced in eastern and central Canada. The natural protection provided by long-distance transportation cost makes it possible for B.C. Tree Fruits to practise price discrimination against the more western buyers. There seems little doubt that this discrimination is a definite part of the agency's pricing policy.

If, in some years, the spread in British Columbia or Alberta is wider than elsewhere, it may well be due to the fact that the list price charged for that part of the apples sold for consumption in these provinces is somewhat higher, on the average, than the price received for all British Columbia fresh apples sold to all buyers. That is, it may well be due to price discrimination against the British Columbia and Alberta buyers. That part of the spread between the price finally received by the producers and the price paid by the first buyer tends to be widened by the practice of price discrimination. At the same time it should be recognized that the farm price itself is made somewhat higher because of price discrimination against western buyers. The farm price is made higher to the extent that some of the buyers are made to pay higher (discriminatory) prices. However, the price discrimination raises the farm price far less than the list price charged the British Columbia and Alberta buyers. This is because the farm price is the result of all sales to all markets. It is an averaged pool price resulting from sales at non-discriminatory as well as at discriminatory prices.

There is, however, another reason, apart from the influence of price discrimination, why the operations of the marketing board might affect the width of the spread in British Columbia. Since the board pools all its marketing costs, the spread in British Columbia is likely to be made wider to the extent that that part of the product which is sold and consumed in British Columbia must bear part of those costs which the board must meet in respect of the largest part of its sales which are made elsewhere. Thus, the retail prices in parts or all of British Columbia may be higher than they would be otherwise, partly because the board's list price is higher in British Columbia and partly because British Columbia consumers must share some of the costs of marketing at more distant points. Here again, however, there seems no reason to believe that this particular influence on the spread has been any more pronounced in the last decade than in the years immediately prior to that.

In considering the British Columbia or Alberta spread it is necessary to realize that a large fraction (around half) of the total spread consists of the various costs of the shippers, i.e., the difference between the gross amount returned to the shippers by the selling agency (B.C. Tree Fruits) and the net price finally received by the growers after the shippers' costs are deducted, and that the operations of the B.C. Fruit Board or its agency, B.C. Tree Fruits, cannot possibly influence these shippers' costs to more than a limited extent. It may be that the orderly marketing policy pursued by the board has lengthened the apple storage period or increased the percentage of the fruit that is stored and thereby added to the unit cost of storing. It could also be that, by stressing quality improvement and increasing the number of grades or classes in which fruit is sold, the board has increased the cost of packing and inspecting. Apart from ways such as these, the

board could probably only influence the width of the spread by charging discriminatory prices. It should be noted, however, that any effect the board may have had on the spread for the reasons just cited has probably not been any greater in the last few years than in the late forties or early fifties. Indeed there is every reason to expect that the increasingly intensive competition which the board has encountered in more recent years from Washington, Michigan and eastern Canada has reduced considerably its opportunities to gain from using price discrimination tactics. This would suggest that any effect which the board's price discriminating policy may have had on the width of the spread in certain areas has been decreasing rather than increasing in recent years.

While the B.C. Fruit Board has had the longest continuous existence of any marketing board in the country and is generally reputed to have had an outstanding record of performance, it is by no means the only marketing board in British Columbia. Apart from the milk marketing board which was created following the Royal Commission report in 1955,¹ both the British Columbia Interior Vegetable Marketing Board² and the B.C. Coast Vegetable Marketing Board have been in existence since 1935. Both of them have experimented with a wide variety of controls and both have used the central selling agency technique. The Coast Vegetable Board has been particularly active in extending the sphere of its operations. A co-operative was formed to act as its marketing agency in 1945 and all growers were required to market through it. A large warehouse was constructed in 1947. This now provides cold storage facilities, and grading, washing, sorting and packaging equipment, as well as office space and a laboratory for testing potatoes. In an attempt to meet increasingly effective competition from potatoes grown in the State of Washington an extensive grading, packaging and branding program was instituted in 1952. The operation is on a large scale and results in low-cost packaging which, in turn, has helped greatly in meeting United States competition. In 1959 the board announced that it is starting to construct a second plant to cost \$600,000 in Richmond on the north arm of the Fraser River.³ It will have facilities to grade, wash and pack about 400 tons of potatoes per day and storage space for 7,000 tons. It is expected that the plant will handle about 40,000 tons annually of Fraser Valley vegetables. Rail siding facilities are to be provided to permit shipment of produce to prairie markets.

1 Report of the British Columbia Royal Commission on Milk, 1954-55, Queens Printer, Victoria, B.C.

2 Despite its lengthy existence, this board has encountered many obstacles and at present faces some very serious problems. For a detailed account of this board's development, its marketing methods, the nature and causes of its present problems, together with suggested requirements for their solution, see Report on the British Columbia Interior Vegetable Industry by E.L. Menzie, Department of Agricultural Economics, University of British Columbia in co-operation with the British Columbia Department of Agriculture, 1956.

3 Canadian Grocer, April 25, 1959.

The Milk Marketing Boards

Before concluding this discussion something should be said about the milk marketing boards which have been operating in the several provinces since the mid 1930's. During the public hearings of the Commission, witnesses in different parts of the country suggested that these particular boards had been very successful in preventing spreads from widening. Because of this alleged success it was further suggested that the type of marketing represented by the milk boards might well be copied in connection with the marketing of farm food products generally.

In considering these suggestions it seems necessary to refer briefly to the special circumstances which gave rise to these boards as well as the general nature of their activities. Prior to 1933 or 1934 the prices obtained for milk for fluid consumption were the result of voluntary negotiation between representatives of producer and distributor organizations. By 1933, however, the prices paid at cheese factories and creameries fell so low that farmers who normally supplied these outlets tried to secure a higher price by offering milk to fluid milk consumers at prices somewhat lower than those specified in the voluntary agreements between the regular producers and distributors. This extra milk was sold by a new crop of distributors and usually in unpasteurized form to consumers whose buying power was low due to wage reductions and unemployment. The result was that the volume of business of regular distributors declined, buying and selling prices lost all semblance of constancy and the voluntary price agreements became completely unenforceable. In these circumstances regular producers and distributors appealed to their provincial governments to bring order out of chaos by establishing producer and consumer prices, controlling the number and kind of distributors and exercising general supervisory powers.

These appeals, plus a general concern about the maintenance of enough milk of high quality, led to the passage of milk control acts in the several provinces. The situation was considered to be serious and the legislation was looked upon as emergency in character. While it provided for boards with almost complete control over all phases of marketing, in practice the boards have been concerned chiefly with setting prices and licensing and bonding distributors. To a lesser extent they have been concerned with testing milk in distributing plants, regulating rates charged for transporting milk from the farms and investigating the possibilities of reducing spreads in distribution. It is significant that this type of regulation has called for regulation of existing marketing agencies and methods rather than any attempt at performing the actual marketing functions by the boards themselves.

Though they were created to deal with an emergency situation the boards have continued to operate, chiefly because producers have practically insisted on the maintenance of governmental assistance in setting prices. They have argued that, without this help, their ability to bargain relative to that of the distributors would steadily diminish in view of the tendency of the latter to become fewer and larger.

When the boards were first set up, and for many years thereafter, prices were set at the consumer as well as at the producer end. This automatically established the width of the margins or spread. As time went on, however, it was felt by some that the fixing of retail prices was making it unnecessary for distributors to compete with one another and thereby discouraging the possibility of securing further marketing economies and reductions in the prices charged consumers.¹ In an attempt to encourage such economies and price reductions some of the boards in more recent years have eliminated fixed retail prices. In most, if not in all cases, however, they have provided maximum levels above which retail prices cannot go. They have thus set maximum retail prices but no minimum ones.

The suggestion that the fixed retail price should be removed has encountered considerable producer opposition. Such opposition was voiced by several producer representatives during the Commission hearings. In British Columbia, where the fixed retail price was removed in 1953, the representative of the provincial Federation of Agriculture expressed strong opposition.² Similar objection was registered in Prince Edward Island, Nova Scotia and New Brunswick. This opposition appears to be based on a fear that removal of a fixed price at the retail end will make it more difficult for some distributors to earn their accustomed income with the result that distributors will press for relief in the form of reduced prices at the producer end. There is also the fact that, in the price negotiations which have taken place over the years, there has been a tendency to divide any increase or decrease in the retail price fairly equally between the producers and distributors. It is undoubtedly easier to do this when the retail as well as the producer price is fixed.³ Moreover, when a given increase or decrease in retail price is divided equally between the two groups, the producer's share of the consumer dollar tends to remain unaltered.

In respect to the general suggestion that the milk board pattern should be considered for the marketing of other products, there is one point that deserves special consideration. In the marketing of fluid milk it has been possible to maintain fixed producer prices mainly because any milk that could not be sold for fluid consumption at these prices could be disposed of for other uses at so-called surplus prices. It is difficult to see how a similar procedure could be adopted in the case of most other farm products. It may well be that the apparent tendency of agricultural producer groups generally to advocate the milk board

1 Report of the Ontario Royal Commission on Milk, 1947, pp. 106-111.

2 Proceedings, p. 79.

3 In respect to retail milk prices there is the further practical requirement that, whenever a retail price is changed, it has to be changed by 1¢ or $\frac{1}{2}$ ¢ per quart. The use of other fractions of varying sizes is simply not workable in practice. Furthermore, in those provinces where the formula method of making price adjustments is used, the usual practice is that no adjustment is made until the formula indicates a 19¢ per 100 pound variation in either direction. Nineteen cents in the producer price is equivalent to approximately $\frac{1}{2}$ ¢ per quart in the consumer price.

type of marketing is due to the fact that fluid milk represents a case where it has been found possible to limit supply and thus prevent a drop in producer price. There is, of course, the further fact that some of the boards have made considerable use of special cost-study data when setting producer prices. The fact that this practice has helped to maintain milk prices at levels satisfactory to producers may also help to explain why producers have suggested that the methods followed or represented by the milk boards might well be applied in connection with the marketing of other farm products. In view of the recent farmer concern with falling selling prices, the fact that fluid milk prices have been well maintained may have considerable significance.

In line with what has just been said there is one further general comment we wish to make in regard to marketing boards in general. The fact is that, thus far, Canadian marketing boards, other than the milk boards just mentioned, have been trying by one means or other to obtain the highest possible price for all of the various commodities that happened to be produced. In other words they have not attempted to raise price by controlling production. There has been no attempt to interfere with the free-entry principle. This suggests that, if the boards have in fact managed to raise prices, they have thereby provided a special incentive to expanded production which sooner or later will produce price-depressing effects. Should this happen, any price-raising benefits that may have been derived from marketing board action may prove to be rather short-lived.

General Summary

The foregoing discussion of marketing boards can perhaps best be summarized in the form of a series of general statements as follows:-

1. The demand for legislation providing for marketing boards with power to exercise 100% control over supplies arose when experience proved that certain kinds of marketing activities and objectives could not be achieved through voluntary co-operation.
2. The demand was also partly due to the pronounced drop in farm incomes during the depression years and the growing farmer conviction that effective producer bargaining power could not be obtained without complete ability to control supplies.
3. The essential feature of all marketing boards is the ability to compel a dissenting minority of producers to fall in line with the wishes of the majority.
4. The general objective of the boards is to raise farm prices and incomes by undertaking special types of control in connection with marketing.

5. In attempting to achieve this objective, marketing boards have adopted widely different kinds and degrees of control. The majority of the Ontario boards and those established so far in Quebec have concentrated on collective bargaining. For this reason they have come to be known as negotiating boards. Other boards have sought higher prices by controlling the rate of flow to market, by expanding demand through improving quality and advertising, by charging different prices in different markets, by selling different varieties or grades of a product to different income groups, by varying the form in which a product is sold or by using control over supply to achieve economies of scale in the performance of marketing functions.
6. Despite the fact that all provinces possess the necessary permissive legislation, the actual extent to which marketing boards are employed in Canadian farm food marketing, is, after all, still relatively limited. Canadian marketing board activity has so far been limited geographically, in respect of the number of products handled, in respect of the length of operating period, and in respect of the number and variety of control measures employed.
7. Despite these definite limitations marketing board development has been both considerable and continuous. The total number of boards has shown a steady increase.
8. Thus far the major part of marketing board activity has taken place in Ontario and British Columbia.
9. Boards may be classified into three general types - negotiating, negotiating-agency, and central agency boards. Generally speaking, these three classes really represent variations in the scope of board activity. The sphere of activity tends to widen and the number and variety of control measures tends to increase as one passes from the negotiating to the agency type.
10. The particular type or types of control employed depend upon many factors including the nature of the commodity being marketed, the need for gaining experience, the amount of capital available, the willingness or unwillingness of producers to submit to specific kinds of control, distance from market, the particular pattern of the already-existing marketing structure and the nature of the producers' diagnosis of specific marketing problems.

11. Actual experience with the negotiating type of board indicates a considerable variation in the ability to influence producer prices. In certain cases a board's ability to influence prices has been limited by the necessity of meeting outside competition, or by the fact that anticipated supply and demand varied greatly from the actual supply and demand which eventuated several months later. It would appear that a negotiating board cannot have any price-raising effect unless the negotiated price is also the price at which a product is actually sold.
12. Thus far Quebec marketing board activity has been primarily concerned with the creation and operation of joint marketing plans which involve price negotiations between producer and buyer representatives.
13. There appears good ground for believing that, in a good many cases, the bargaining power of producers has been strengthened considerably by the use of negotiating committees. The ability to use the collective bargaining principle, the probability that producer-bargaining representatives have possessed better than average bargaining skill, the very considerable addition of general market information, and the fact that prices have been based, to some extent, on the results of special cost studies, have all been factors making for increased bargaining power. On the other hand, there have apparently been instances where producer representatives have deliberately refrained from pressing for higher prices during negotiation proceedings.
14. On balance, the greater equality of bargaining power resulting from action of marketing boards has probably meant some improvement in producer prices. If such has been the case and, if it has been impossible to pass any or all of these higher prices on to consumers, as appears probable in at least some instances, operation of the boards may have indirectly narrowed the spread to some slight extent. However, it does not seem possible to determine whether or not this has, in fact, occurred.
15. Despite the probability that producer bargaining has been strengthened considerably, it seems unlikely that it has become as strong as that of the processors.
16. So far as negotiating boards are concerned, operating costs appear to have been extremely small.

17. In the case of at least two boards of the negotiating agency type - The Bean Growers' Board and Cheese Marketing Board in Ontario - the average price received by producers appears to have been increased appreciably as the result of the use of a two-price policy. However, the actual price benefit derived by producers has varied considerably from year to year.
18. While board programs may have benefited producers in these two cases, they have certainly resulted in Canadian consumers being discriminated against in the matter of price. In other words, the higher producer prices have been made possible because the United Kingdom demand was more elastic than the Canadian demand. This made it more possible to shift the burden of higher prices on to the consumers.
19. In connection with the cheese board's activities the net gains to producers have been increased quite considerably because various forms of assistance have been given by the federal and Ontario governments.
20. Of special significance is the fact that the price-raising efforts of the Ontario cheese board have benefited cheese producers in Quebec at no cost to themselves.
21. There seems every reason to believe that the New Brunswick Cheese Marketing Board has managed to secure significantly higher producer prices. Since these higher prices have been due mainly to the board's storage and orderly marketing program, it seems unlikely that retail prices have been either increased or decreased. To the extent that this is so, the board's activities have contributed to some narrowing of the spread.
22. Since the basic objective of the Nova Scotia and New Brunswick Hog Marketing Boards has been to maintain the practice of marketing through a co-operative sales agency it is difficult to see how operation of these boards has influenced either producer price or general marketing efficiency. They have simply served to maintain a situation which existed before the boards were created.
23. It appears impossible to either prove or disprove that the activities of the Ontario Hog Marketing Board have increased producer prices. In any case, whatever the effects on prices may have been recently, they were almost non-existent during most of the period of special concern to the Commission.

24. By far the widest variety of control methods has been used in the case of the British Columbia marketing boards. This is particularly true of the British Columbia Fruit Board which has controlled such matters as the time and place of marketing, the quantity and quality of the product marketed, the per cent marketed in fresh and various processed forms, the nature of the containers used. It has also undertaken extensive research, sought to expand demand through advertising, and performed processing and brokerage functions. The British Columbia Fruit Board has sought to raise producer prices through regulating the flow to market, employing specialized and well-informed salesmen and practising price differentiation. In short, it has made the fullest use of controlled marketing legislation of any board in Canada.
25. The general practice of the board is to sell to British Columbia and Alberta buyers at higher prices than those charged buyers in other provinces. There seems no reason to believe, however, that any such price differences have been more pronounced since 1950 than in the immediately preceding years. Indeed it seems likely that they have become considerably less in more recent years.

THE CHANGING SITUATION IN THE CANADIAN FARMING INDUSTRY, 1941 TO 1957

A. The Scope and Purpose of the Study

The marked changes that have occurred within the farming industry since World War II have had a significant effect on the level of farm prices.¹ Two of the important changes in farming have been the introduction of improved production techniques and substantial increases in the amounts of capital invested in machinery and equipment, farm buildings and livestock. The effect of these has been a substantial increase in the level of farm output (supply) with consequential effects on the levels of prices received by farmers for their products. This study presents an analysis of the data reflecting the changes in agriculture in relation to prices and incomes for the years 1941 to 1957.

The period 1951 to 1957, when farm prices declined sharply and then levelled off, is of immediate interest. To the extent that the decline had its origins prior to 1951, it is desirable to look back into the earlier period for developments in certain lines. Comparisons are made for shorter time periods representing the sharply changing conditions affecting agriculture. Thus the years of World War II, 1941 to 1945, were significantly different from the peace-time era, 1946 to 1950. The outbreak of hostilities in Korea in 1951 brought a peak in farm price levels, the effects of which percolated through to 1953. The most recent period, 1954 to 1957, is representative of a struggle of agriculture to adjust to longer-run trends.

There is a certain degree of regional specialization in Canadian agriculture. Changes in farm prices, therefore, have varying effects on different producing regions. In the ensuing analysis reference is made to the varying impact on different regions of changing prices of farm products and changes in farm technology.

Resulting from the agricultural development of the last two decades, there has been a sharp decline in the number of farms and in the total labour force employed in agriculture. For this reason, aggregate value and volume figures for items such as farm income and farm capital reflect inadequately the full impact of technological changes upon the farm enterprise as a unit. The analysis in this study, therefore, is based upon an "average per farm".

1 For a general economic study of the changing situation in Canadian farming industry, the reader is referred to "Progress and Prospects of Canadian Agriculture", Royal Commission on Canada's Economic Prospects, 1957. Since issue of that study, data from the Census of 1956 have become available and also consequent revisions in several of the basic agricultural statistical series. These new data have been used in preparing this study and it was considered useful to present an analysis based on these data in this volume.

Counts of farms (using Census definitions) are not carried out in intercensal years. Because of this lack, the estimates of farms for years intervening between Censuses are derived from straightline interpolations. To the extent that changes in numbers of farms in any given year departed from the straightline interpolation, averages per farm, as shown in the tables, will be an under- or overstatement of the actual situation. However, the major interest in this study is the analysis of trends. In the main, the derivation of estimates of number of farms by a straightline interpolation would not affect significantly the year-to-year changes in averages per farm.

B. Conditions in Agriculture, 1941 to 1945

Conditions in Canadian agriculture in the early years of World War II were, to a large extent, a reflection of the preceding depression. The industry entered the war with depreciated and obsolete equipment, considerable unemployment (or underemployment) and heavy farm debts.

During the war, farm prices rose under the pressure of heavy wartime demand, but control measures limited the extent of increase in prices received and also maintained relative stability in input prices. But output increased and this, combined with higher prices, led to appreciable improvement in farm incomes. Net farm income from farming operations per farm, in terms of 1957 dollars, was \$1,391 in 1941 and \$2,133 in 1945 - an increase of some 57% in real terms.

As farm income improved, debts were paid off. Total farm debt for the Prairie Provinces, as reported in the quinquennial Censuses, in 1946 was only 54% of the amount reported in 1941. In 1941, 39% of all Prairie farms reported "mortgages and/or agreements for sale" as compared with only 25% in 1946. Further, the debt in absolute dollars was much easier to service because prices of farm products rose by 85% from the 1941 to the 1946 average.

The improvement in farm incomes came about while the agriculture labour force declined. Incomes per member of the farm labour force increased. But the difficulty of obtaining capital equipment in the war years was reflected in a decline in volume of sales of farm implements and machinery. This restrained the expansion of new investment and output to some extent, and set the stage for a period of rapid investment after the war.

C. The Era of Capital Improvement

The total value of farm capital increased considerably between 1941 and 1957, but the period of most rapid expansion began after the war in 1946 and continued through to the early '50's. There was a strong demand for farm products immediately following the war. As

decontrol proceeded, the domestic market adjusted to peace-time needs. The export market revived as war-devastated countries depended more on North American supplies. Farm prices rose as supplies were inadequate for postwar requirements. Rising prices were an incentive to increase output, and the capital investment program grew apace.

Following the end of the war, the amount of capital per farm and per worker increased significantly. This strengthened the productive capacity of farms and farm workers, as will become clear in a subsequent section on changes in productivity. Table 1 shows the changes in the value of capital per farm, while Table 2 shows the changes in the value of capital per worker in agriculture.

TABLE 1. VALUE OF CAPITAL PER FARM: CANADA AND REGIONS,
AVERAGES BY PERIODS, 1941 TO 1957

(Dollars)

	<u>CANADA</u>	<u>Maritime</u> <u>Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie</u> <u>Provinces</u>	<u>British</u> <u>Columbia</u>
	(actual dollars)					
1941-45	7,563	3,892	6,231	8,575	8,487	8,430
1946-50	10,920	5,230	7,956	11,660	13,284	12,390
1951-53	15,653	6,745	10,679	16,866	19,571	15,809
1954-57	17,228	7,342	11,886	19,179	21,053	18,023
	(1957 dollars)					
1941-45	14,665	6,473	10,098	17,531	17,982	15,163
1946-50	15,494	6,556	10,937	17,899	18,809	17,448
1951-53	16,806	6,922	11,733	18,989	20,495	17,732
1954-57	18,036	7,636	12,428	20,256	21,740	18,884

Source: Data from Dominion Bureau of Statistics, Agriculture Division.

TABLE 2. VALUE OF CAPITAL PER FARM WORKER: CANADA AND
REGIONS, AVERAGES BY PERIODS, 1941 TO 1957

(Dollars)

	<u>CANADA</u>	<u>Maritime Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie Provinces</u>	<u>British Columbia</u>
	(actual dollars)					
1941-45	4,680	2,541	3,521	5,288	5,490	5,015
1946-50	6,820	3,580	4,413	6,748	9,167	7,450
1951-53	10,418	4,750	6,787	10,776	13,309	12,662
1954-57	11,857	5,234	7,466	12,628	15,419	14,718
	(1957 dollars)					
1941-45	8,942	4,220	5,702	10,818	11,467	9,015
1946-50	9,241	4,482	6,057	10,340	13,018	10,457
1951-53	11,059	4,875	7,456	12,135	13,935	14,187
1954-57	12,332	5,442	8,306	13,308	15,915	15,410

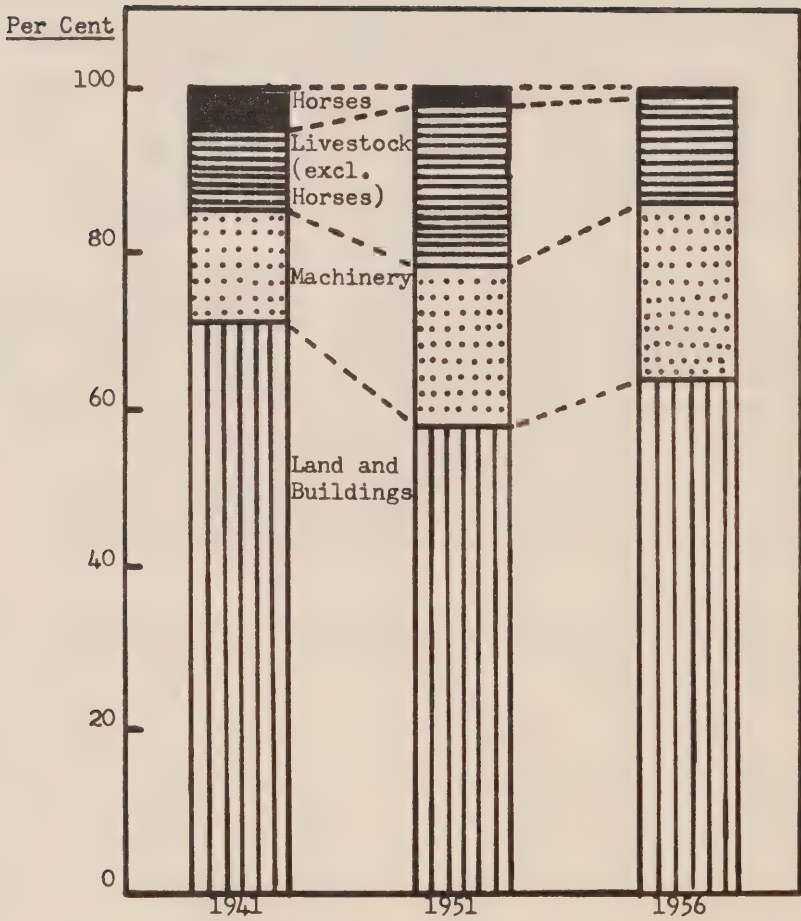
Source: Data from Dominion Bureau of Statistics, Agriculture Division.

Most of the increase in the value of farm capital in the postwar and Korean periods was a result of heavy investment in farm machinery and equipment, and a buildup of producing livestock (wool-, milk-, meat- and egg-producing animals) on farms. Increases in the total value of land and buildings were comparatively moderate, while both the numbers and values of horses declined drastically. Chart 1 shows changes in the percentage distribution of farm capital. The increase in the relative importance in terms of value of livestock (excluding horses) and machinery between 1941 and 1951 is readily apparent. The 1951 livestock values were exaggerated, particularly by the high prices prevailing at or near the peak of the beef cattle price cycle.

The rapid buildup of capital depicted in these tables and chart accounts, in part, for the condition of oversupply that later developed and contributed to the decline in farm prices after 1951.

One of the features of the "era of capital improvement" was the expansion in the average size of farms, as measured by area. Average area per farm in 1941 was 237 acres. By 1951, this had expanded to 279 acres - an increase of 18%. The trend continued through to 1956, when the average size of farms was over 302 acres - 28% larger than in 1941 and 8% larger than in 1951. The increase in the average size of western farms (particularly Saskatchewan and Alberta) proceeded at a greater pace than in the east. The average size of Saskatchewan farms, for example, was 40% larger in 1956 than in 1941, as compared to only an 8% increase over the same period for New Brunswick.

CHART 1. CHANGES IN THE DISTRIBUTION OF FARM CAPITAL,
CANADA, 1941 TO 1956



The expansion in the average size of farms accompanied a reduction in the number of farms. There were only slight changes in the total land area in agriculture. In fact, the reported total area in agriculture for Canada in 1956 was slightly less than in 1951. The abandonment of farm land in the east was greater than any additions in the west.

Table 3 contains average values of livestock (excluding horses) on farms as at June 1 of each year for four periods between 1941 and 1957 in terms of both actual and constant (1957) dollars. Because horses are a source of farm power, they have been separated from "livestock" for the purposes of this analysis.

TABLE 3. VALUE OF LIVESTOCK (EXCLUDING HORSES) PER FARM,
AVERAGES FOR SELECTED PERIODS AS AT JUNE 1:
CANADA BY REGIONS, 1941 TO 1957.

(Dollars)

<u>CANADA</u>	<u>Maritime</u> <u>Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie</u> <u>Provinces</u>	<u>British</u> <u>Columbia</u>	
(actual dollars per farm)						
1941-45	1,099	512	953	1,458	1,101	1,157
1946-50	1,753	836	1,541	2,443	1,687	1,635
1951-53	2,778	1,245	2,179	3,535	2,917	2,392
1954-57	2,387	1,051	1,874	3,081	2,570	2,154
(1957 dollars ^a per farm)						
1941-45	1,896	894	1,523	2,537	1,941	1,991
1946-50	1,799	845	1,522	2,531	1,767	1,759
1951-53	1,938	904	1,632	2,734	1,940	1,602
1954-57	2,308	1,029	1,887	3,081	2,532	2,000

a Deflated by index of average values per head.

Source: Dominion Bureau of Statistics, Agriculture Division.

Aggregate values of livestock on farms at June 1 in the post-war years were greater than during the war years in terms of actual dollars. But average values per head were much higher; allowing for this change in value per head, in terms of volume (deflated values), there were fewer livestock in the 1946-50 period. There was a subsequent increase in the 1951-53 period, however - particularly in Ontario. The most marked increases came in the 1954-57 period for all regions in Canada. It should be pointed out, however, that these annual livestock inventories are materially influenced by cyclical movements in cattle and hog numbers. For example, the periods 1941-45 and 1950-57 include

a number of years representing upward phases in the cattle numbers cycle, while 1946-50 represents a downward phase.

The decline in the number of horses on farms was a direct result of the farm mechanization program. This is supported by the fact that the rate of decline in the western provinces has been greater than in the east and began at an earlier stage. Besides giving way to more productive methods of farming, the disappearance of horses released farm land which had been used to produce feed for these animals. This, in turn, increased the carrying capacity of farms for livestock destined for human consumption.

The number of horses on farms in Canada at June 1, 1957, was only 31% of the number at the same time in 1941. Prairie farms had 79% less horses in 1957 than in 1941, as compared with 53% less in Quebec and 56% less in the Maritimes.

Table 4 presents estimates of the dollar purchases per farm for new farm machinery and equipment since 1941. An adjustment for price changes indicates actual volume changes and index numbers of changes in volume of new purchases per farm are shown in Table 5.

It was not until 1946 that increases in volume of purchases of new farm implements and machinery became rapid. After the war the agricultural implements industry reverted to full-scale peace-time production, and volume of purchases showed progressive increases from 1946 through to 1951. The increases in purchases for the Prairie Provinces in the immediate postwar years were greater than for the eastern provinces. The peak year for the Prairie region was 1949, as compared to 1952 for the Atlantic Provinces.

The decline in volume of purchases per farm in more recent years is a reflection of the unfavourable cost-price relationship and also the substantial stock of farm machinery already on farms as a result of the rapid buildup in the earlier period, as indicated in Table 6.

Estimates of the value and volume of farm machinery on farms as at June 1 of each year for the four time periods since 1941 are presented in Table 6.

The average value of machinery per farm in the 1951-53 period was between three and four times as much as the average for the 1941-45 period for the Prairie Provinces, and from two to three times as much for Quebec and the Maritimes. In terms of physical volume there was an increase of well over 100% for the Prairies. On the whole, stocks were substantial in the early '50's and with the levelling off of new investment the increase in the most recent period (1954-57), was less spectacular.

The increase in volume of machinery and equipment was, in part, complementary to the decline in the number of horses on farms. There is a close correlation between the two. Tractors and tractor-drawn implements replaced the horse-and-plough and contributed

TABLE 4. PURCHASES OF NEW FARM IMPLEMENTS AND MACHINERY
PER FARM, 1941 TO 1957^a

(Dollars)

<u>Year</u>	<u>CANADA</u>	<u>Maritime Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie Provinces</u>	<u>British Columbia</u>
1941	769	248	397	854	1,064	527
1942	601	236	315	826	1,075	557
1943	445	162	219	449	641	344
1944	885	291	357	800	1,237	564
1945	973	399	435	927	1,443	716
1946	1,243	582	634	1,274	1,706	1,180
1947	1,882	671	817	1,781	2,821	1,571
1948	2,653	866	1,080	2,467	4,076	2,129
1949	3,412	868	1,215	3,097	5,494	2,282
1950	3,466	968	1,405	3,390	5,400	1,626
1951	3,803	1,146	1,773	3,918	5,673	1,918
1952	4,100	1,557	1,798	3,473	6,556	1,927
1953	3,959	1,373	1,586	3,105	6,589	1,753
1954	2,472	944	1,328	2,722	3,370	1,660
1955	2,619	1,257	1,731	3,067	3,189	2,069
1956	2,982	1,411	1,902	3,051	3,966	2,058
1957	2,640	1,009	1,978	2,777	3,397	1,558

^a Values at wholesale prices.

Source: D.B.S. Farm Implement and Equipment Sales (annual).

TABLE 5. RELATIVE CHANGES IN THE VOLUME OF PURCHASES OF
NEW FARM IMPLEMENTS AND MACHINERY PER FARM,
1941 TO 1957.

(1941 = 100)

<u>Year</u>	<u>CANADA</u>	<u>Maritime Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie Provinces</u>	<u>British Columbia</u>
1941	100.0	100.0	100.0	100.0	100.0	100.0
1942	92.9	90.9	75.6	92.1	96.3	100.7
1943	54.0	61.1	51.7	49.2	56.0	59.8
1944	106.1	109.7	83.5	87.2	106.9	98.2
1945	119.9	153.8	104.5	103.7	128.3	128.4
1946	148.3	217.6	147.4	137.9	146.8	204.8
1947	211.4	235.9	179.0	181.0	228.2	256.3
1948	265.4	272.0	211.2	224.4	294.4	310.1
1949	305.6	243.4	212.3	251.6	354.8	297.2
1950	297.4	262.3	237.2	266.6	333.7	202.6
1951	288.5	274.2	264.0	271.2	310.0	211.4
1952	297.5	356.8	256.9	230.7	341.9	202.7
1953	285.0	313.6	225.6	205.3	340.9	182.9
1954	177.1	215.0	188.3	179.5	173.2	172.0
1955	186.8	284.2	243.6	200.7	163.3	213.8
1956	202.0	300.2	252.1	188.0	193.4	202.4
1957	167.2	199.0	243.0	158.6	155.5	143.9

Source: Adapted from data in Table 4.

TABLE 6. VALUE OF FARM MACHINERY PER FARM AS AT JUNE 1:
CANADA BY REGIONS, AVERAGES FOR SELECTED
PERIODS, 1941 TO 1957.

(Dollars)

<u>CANADA</u>	<u>Maritime</u> <u>Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie</u> <u>Provinces</u>	<u>British</u> <u>Columbia</u>	
(actual dollars)						
1941-45	1,065	474	699	1,120	1,383	905
1946-50	1,935	799	1,113	1,932	2,673	1,642
1951-53	3,343	1,241	1,710	3,253	4,886	2,331
1954-57	3,817	1,544	2,072	3,900	5,295	2,634

(1957 dollars)^a

1941-45	2,075	928	1,369	2,190	2,692	1,757
1946-50	3,411	1,265	1,761	3,047	4,132	2,550
1951-53	3,877	1,459	2,011	3,826	5,635	2,689
1954-57	4,130	1,687	2,264	4,263	5,754	2,634

a Deflated by relevant price index of farm machinery.

Source: Dominion Bureau of Statistics, Agriculture Division.

significantly to the increase in farm labour productivity. Machines replaced both horses and men.

Larger areas could be cultivated with the help of machinery and this encouraged the expansion in the size of farms by consolidation in the east, and by a combination of consolidation and introduction of virgin land in the west.

D. The Impact of Changes in Productivity

The process of farm mechanization, improvement in livestock breeds, improved varieties of crops and seed, control of insects and diseases, and better farming techniques have all contributed to the increase in farm output.¹ The increase in output, occurring at a time when the farm labour force declined, resulted in a substantial increase in output per man.

However, output per man is not the best measure of productivity, since the number of working hours per man were also declining. By dividing the index of physical volume of production by an index of the farm labour force, an index of gross output per man has

¹ See pp. 79 to 91, "Progress and Prospects of Canadian Agriculture", Royal Commission on Canada's Economic Prospects, 1957.

been obtained. This derived index is a rough guide to changes in productivity, providing qualifications about changes in capital and purchased inputs are kept in mind.

Volume of production (output) fluctuates from year to year and the index is materially affected by fluctuations in grain output. The peaks in Chart 2 for the years 1942, 1951-53 and 1956 coincide with peaks in the output of grain, which resulted primarily from exceptionally favourable growing conditions. The peak in the index of output per man came as late as 1956.

The decline in the farm labour force, after 1946, coincides with the start of the intensive farm mechanization program. Machines replaced men. The most marked decrease in the farm labour force occurred in the Prairie region where the mechanization program had proceeded apace.

The trend line indicates a marked increase in rate of gross output per man over the period of study at a rate of some 4.4 percentage points per year. Output per unit of farm labour in 1955 was over 50% higher than in the 1946-50 period. In the favourable crop year of 1956, it was over 80% higher and was 45% greater in 1957. The capital:labour ratio was higher in the latter years; in terms of physical volume, there was, on the average, 33% more capital available per farm worker in the 1954-57 period than there was in 1946-50.

The increase in farm output has been facilitated by an increase in inputs - particularly purchased inputs. As mechanical power displaced animal power, farmers had to buy more oil, grease, gasoline, and other things with which to run their machines. Better farming techniques entailed greater use of fertilizers and sprays. Thus, agriculture became more dependent on other industries as a source of inputs.

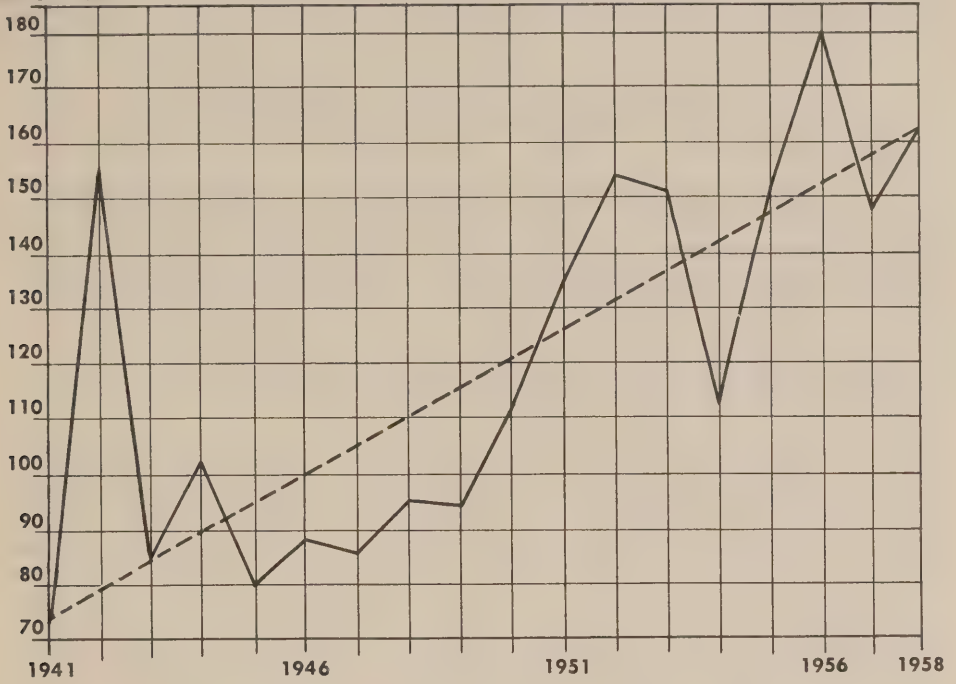
Output-input relationships are of interest in this analysis on two accounts. First, the quantity of inputs in any year gives some indication of planned changes in output. In a longer-run context, changes in the ratio of output to input are a measure of changes in the overall productivity of agriculture.

The index of physical volume of output was divided by the index of volume of input to derive output:input ratios. The average for the output-input ratio in the period 1951-53 was 18% higher than the average for 1946-50, while that for the most recent period, 1954-57, was about equal to the average for 1946-50.

Output fluctuates from year to year because variables, such as the effects of nature, e.g., weather, are as yet mainly unplanned, but the trend has been on the whole upward. Inputs are more stable in the short run, and have shown a strong upward trend since 1941 - particularly in periods when farm prices were high relative to input prices. In spite of the break in farm prices in 1951, the volume of input

CHART 2
TREND IN OUTPUT PER MEMBER OF THE FARM LABOUR
FORCE, CANADA, 1941 TO 1958.

INDEX NUMBERS
1946-51 = 100



continued to increase, indicating that farmers were still planning to increase output in these years, and so output continued to rise. It was not until 1957 - some years after the break in farm prices and the development of unfavourable cost-price relationships - that the volume of input declined, but was still 12% higher than the average for 1946-50.

E. The Implications in Terms of Farm Prices

Farm prices increased steadily and rapidly from 1941 until 1951, when they reached a peak of 197% above the average for the 1935-39 period. Then prices declined sharply from 1951 until 1954, and have remained relatively stable since then. Since price is related to demand and supply, it should be possible to explain changes in prices in terms of these two variables. But demand and supply are, in turn, influenced by several other variables. Some of the variables on the supply side and the net effect of these on the level of farm prices is the subject of discussion in this section.

During the war years, the demand for agricultural products rose faster than supply. The Canadian farming industry was recovering from the prewar years of low levels of output caused, in large measure, by adverse weather conditions. The demand for food at home and abroad pressed hard on the available supplies, raising farm prices. Farmers had difficulty getting factors of production (e.g., capital in the form of machinery) during the war, and this restrained increases in output. Wartime controls became necessary. But in relation to requirements, shortages of food supplies became even more acute immediately after the war. Production in countries where combat was heavy was seriously disrupted, and the onus fell on other countries, including Canada, to meet the needs of these countries. Meanwhile, relaxation of controls at home unleashed the domestic demand for all consumer goods, including farm products. This increase in demand intensified the pressure on available supplies, and farm prices rose rapidly in the postwar period.

Rising farm prices were an incentive to increase production, and with more resources now available, farmers began a program of expanding output. There is evidence of this in the buildup of capital investment on farms starting in 1946. The mechanization program got underway at about this time. By 1947, the volume of purchases per farm of farm implements and machinery, was $2\frac{1}{2}$ times that of 1941. Technological improvements resulted in increased productivity per man, per acre, and per animal unit, with favourable weather conditions also contributing. Supply was rapidly catching up with demand as output increased and shortages abroad became less acute as the agriculture of war-devastated countries recovered.

The outbreak of hostilities in Korea disturbed the process of readjustment. Farm prices rose to even greater incentive levels, while

unit prices of inputs lagged. Farm prices in 1951 rose over those of 1950 on the average of 13.8%, a rate of increase that was exceeded only in 1948 when farm prices rose by 18.5%. As the Korean situation eased, demand for agricultural products and other raw materials slackened. By this time production had well recovered in Europe. But output was at a high level and farmers were planning further increases. The volume of purchases of implements and machinery per farm in the years 1949 through 1953 averaged almost three times that of 1941, even though the inventory of machinery per farm in June, 1951, was 16% greater in volume than in 1949. The average volume of inputs in the 1951-53 period was 8% higher than the average for 1946-50 and total output rose to peak levels with favourable weather.

The break in farm prices came in the latter part of 1951 and reflected the pressure of supplies on the market. Farm prices fell by 8% in 1952.

It was shown that farmers were still planning increases in production in 1951. This continued in spite of the decline in farm prices which began in 1951 and continued through to 1955. The quantity of machinery per farm continued to rise during these years. An increase in investment is reflected at a later stage in increased output. Capital investments of a durable nature are committed inputs and this makes it more difficult to reduce output. Average volume of inputs for the years 1954-57 was 13% more than the average for 1946-50, while volume of output was 14% higher.

Generally favourable weather conditions prevailed in the early '50's and this helped to increase crop yields. The peak years of output, 1951-53 and 1956, coincided with high grain output resulting from good weather.

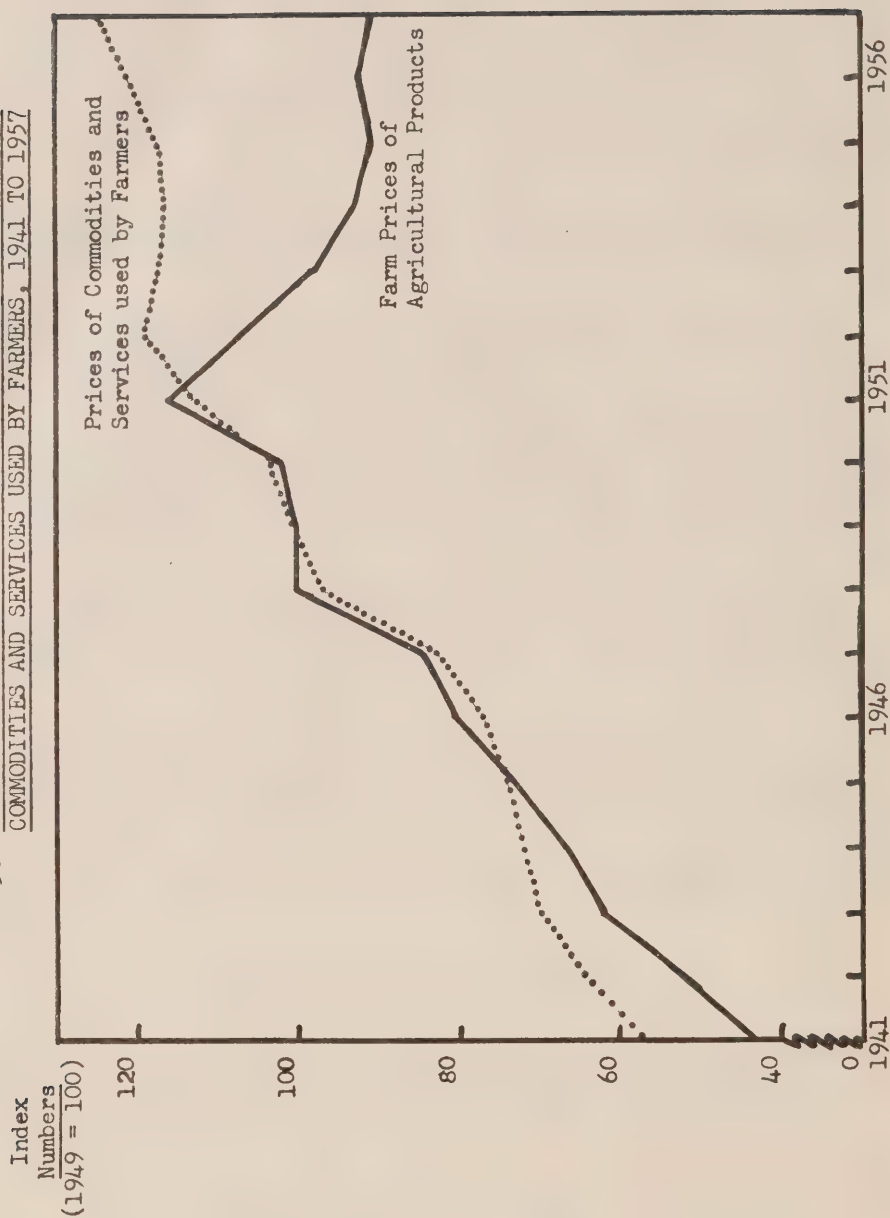
The continued application of improved techniques in the 1951-57 period increased productivity further, thus contributing to the oversupply. Gross output per worker in 1957 was 45% higher than the average for the 1946-50 period, and was 80% higher in the good crop year of 1956. Even in the poor crop year, 1954, when rust damage resulted in low grain yields, output per worker was 12% higher than the average for 1946-50.

F. Impact of Changes on Farm Incomes

Chart 3 shows the relationship between changes in the prices of farm products and the prices of commodities and services (exclusive of farm family living) used by farmers for the period 1941-57. The index of prices received by farmers reflects changes in the prices of farm products relative to the base year, 1949. Likewise, the index of input prices reflects changes in these prices relative to 1949.¹

1 These indexes were constructed on a five-year base, 1935-39. They were changed to a 1949 base by recalculation.

CHART 3. INDEX NUMBERS OF PRICES OF FARM PRODUCTS AND PRICES OF
COMMODITIES AND SERVICES USED BY FARMERS, 1941 TO 1957



When input prices rise at a greater rate than output prices, often it is contended that farmers are in a less favourable position, since it costs more to produce commodities that now fetch a lower price than in the base year. The existence of such a situation has been referred to in popular jargon as the "cost-price squeeze", and in recent years it has been a prominent theme of farmers' representations to the public and to governments.

Apart from questions about the usefulness and validity of a comparison of changes in unit output prices with changes in unit input prices, the nature of the relationship described by graphic and tabular presentation of these is highly dependent on the base period selected. The presentation in Chart 3 is not intended to convey any suggestion of normality in 1949 relationship of prices. The year 1949 was used as a base in this instance only to provide consistency with most of the analysis in other parts of the report.

Since farm incomes are a residual of receipts less expenditures, it follows, other things being constant, that when input prices rise at a greater rate than output prices, this will have an adverse effect on net incomes. The effect becomes more pronounced if the trend is towards greater use of purchased inputs, as has been the case in Canadian agriculture over the period of study. But it has already been shown in the analysis that there were substantial increases in efficiency during the postwar period. Thus, in certain types of enterprises, net incomes per farm and per worker were not as seriously affected as would appear from the bare "output price-input cost" comparisons.

Realized gross income is the sum of cash receipts from the sales of farm products, income in kind, and supplementary payments under the provision of the Prairie Farm Assistance Act, Prairie Farm Income Plan, and Wheat Acreage Reduction Program. Operating expenses and depreciation includes taxes, interest and rent, as well as all purchased inputs including hired labour. The adjustment for inventory change includes the value of physical changes of farm-held year-end inventories of grain and livestock. Net farm income is derived by subtracting operating and depreciation charges from realized gross income and adding the value of inventory change. It represents returns to farm operators and their families for labour, management, and for their share of the capital in the farm business.

Year-to-year changes in farm incomes for Canada as a whole are materially affected by the changes for the Prairie Provinces. There is a marked correlation between the two series, with Prairie incomes generally higher than the average for Canada. The net farm income per farm, in actual and in 1957 dollars, is given in Table 7.

For all regions, average net farm income in actual dollars rose from the war years and reached peak levels in the 1951-53 period. The averages for the most recent period, 1954-57, were below the 1951-53 peaks, but were higher than the immediate postwar period, 1946-50, with the exception of the Prairie Provinces. In real terms, the average

TABLE 7. NET FARM INCOME PER FARM

(Dollars)

	<u>CANADA</u>	<u>Maritime Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie Provinces</u>	<u>British Columbia</u>
	(actual dollars)					
1941-45	1,294	674	958	1,321	1,580	1,614
1946-50	1,988	863	1,410	2,040	2,537	1,997
1951-53	3,002	1,014	1,871	2,793	4,294	2,225
1954-57	2,092	927	1,665	2,243	2,493	2,038
	(1957 dollars)					
1941-45	2,224	1,066	1,641	2,277	2,815	2,830
1946-50	2,595	1,102	1,821	2,682	4,173	2,702
1951-53	3,059	982	1,897	2,853	4,384	2,269
1954-57	2,148	939	1,710	2,307	2,552	2,094

Source: D.B.S., Census of Canada; Reference Paper No. 25, (Part II) Farm Income 1926-57; Price Index of Commodities and Services Used by Farmers and Index Numbers of Farm Prices of Agricultural Products.

net incomes from farming for 1954-57 were, on the whole, lower than in the three preceding periods.

The nature of the statistical procedure in compiling official estimates of farm income in Canada is such as to permit only a general and broad analysis of incomes. The fact that grain is a principal product of Prairie agriculture makes it possible to examine, to a limited extent, the effects of changes in prices and volume of output and input on the incomes of that region. Even for the Prairie Provinces, however, this approach is becoming less useful, especially as diversification in agricultural output increases. There have been only sporadic studies and fragmentary evidence on the income position of particular groups of farmers, such as specialized apple growers, beef producers, hog producers, etc., or groups of farmers in areas or regions. Moreover, such special income data of this kind have not, as a rule, been available over a period of time and thus, analysis of changes in incomes related to volume and prices, are not possible for such particular groups of farmers.

In the analysis of average incomes, it is desirable to differentiate between those farms where the operator derives all, or the greater portion, of his earnings from farming and other kinds of farms which are used primarily as residences or as a part-time source of income. But statistics with this type of information have not yet been

fully developed.¹ Previous censuses have classified four main economic types of farms, of which "commercial farms" best approximate the concept of full-time farms. The 1956 Census defines a commercial farm as one which has "...a potential production of \$1,200 or more (based on average production and price series)". In 1956, 79% of all Canadian farms were classified as "commercial crop and livestock farms", but the proportion varies between regions from 92% for the Prairie Provinces, to 46% for the Maritimes.

It is reasonable to expect that if average incomes were calculated for full-time farms separately, the average incomes for these would be higher than those contained in Table 7. The effect of segregating "genuine" farms would vary as between regions, however. It would raise the average for the Maritimes and British Columbia to a greater extent than for the Prairies, Ontario and Quebec.

The rapid decline in the farm labour force has been noted in a previous section. Non-paid farm workers comprise the greater part of the farm labour force; these include the farm operator and all members of the family who work on the farm, but do not receive contract wages in return. Non-paid workers accounted for some 85% of the farm labour force in 1957. Table 8 shows the changes in the average net farm income per non-paid worker in actual dollars, and in 1957 dollars, for Canada and regions. The data represent income from farming operations only and do not include income realized from off-farm work.

The general pattern of average increases per worker during the four periods is similar to that of incomes per farm. There were increases in all periods up to 1951-53, then incomes fell back to levels which were higher than the war and immediate postwar years. In real terms, incomes in the Maritimes declined consistently, but in other provinces, they rose to a peak in 1951-53, but declined in the 1954-57 period to levels lower than those of the two immediately preceding periods.

There is very little data available on the off-farm earnings of non-paid farm workers. The available evidence shows that at any given time, more farmers in the Maritimes, Quebec and British Columbia support their incomes from farming operations with work off the farm than in other regions. These farmers are generally in areas within close proximity to opportunities for fishing or working in the woods during the winter.

1 The reader is referred to Chapter 13 of the study - Progress and Prospects of Canadian Agriculture, Royal Commission on Canada's Economic Prospects, for an exposition on the problem of definition.

TABLE 8. NET FARM INCOME PER NON-PAID WORKER:
CANADA AND REGIONS

(Dollars)

	<u>CANADA</u>	<u>Maritime</u> <u>Provinces</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairie</u> <u>Provinces</u>	<u>British</u> <u>Columbia</u>
	(actual dollars)					
1941-45	1,033	239	636	1,109	1,274	1,472
1946-50	1,580	732	934	1,714	2,128	1,802
1951-53	2,612	890	1,424	2,601	3,591	2,551
1954-57	1,757	788	1,240	1,891	2,113	2,137
	(1957 dollars)					
1941-45	1,774	882	1,090	1,910	2,269	2,370
1946-50	2,052	916	1,202	2,337	2,803	2,424
1951-53	2,663	862	1,443	2,658	3,665	2,612
1954-57	1,804	798	1,275	1,946	2,163	2,426

Source: Data from Dominion Bureau of Statistics, Agriculture Division, Census of Canada; Reference Paper No. 25, (Part II), Farm Income 1926-57 and Reference Paper No. 58, The Labour Force.

CONCENTRATION IN THE CANADIAN FOOD INDUSTRIES

A study was conducted to obtain an indication of the extent of monopoly in food marketing. A study of monopoly can follow three reasonably distinct approaches. One is to compute and comment on general indications of monopoly power; a second is to investigate conditions of monopoly in specific industries; and a third is to describe monopoly practices. In the study reported on here, the first approach has been followed, and we have looked at concentration in the various food industries as a general indication of the potential degree of monopoly.

Concentration, looked at in terms of an index of firm size relative to industry size, can be measured in terms of sales, assets or manpower; a high correlation would be expected to exist between these different measurements provided that firm structures are similar.

While concentration is the most commonly used index of monopoly it suffers from the following disadvantages which interfere with a correlation to an ideal index. (1) Monopoly cannot exist without high concentration, but high concentration does not always imply monopoly power. There may be only one firm in an industry, but fear of entry, competing imports or adverse public relations may prevent it from exercising its norm, its control over output. (2) The index of concentration is not independent of the definition of industry implied in the index. For example, a firm has a monopoly over its brand of coffee, but not over coffee in general: the relevant consideration is the number of close substitutes, which determine to a large extent the elasticity of its demand curve. If demand is highly elastic because of close substitutes little monopoly power can be exercised. (3) The index of concentration is not independent of the area encompassed in the definition. To illustrate, the percentage of grocery sales by Loblaws is large for Ontario, zero for the Maritime Provinces, and small for Canada as a whole. Clearly an index of concentration with respect to Loblaws' sales for Canada as a whole would understate their monopoly power in Ontario and overstate their monopoly power in the Maritime Provinces. To this objection it might be answered that the index of concentration should be restricted to areas in which the firm in question sells; but this is a partial selection of those areas in which concentration is highest, and would therefore exaggerate the degree of monopoly. Carried to the extreme it would mean that each independent local grocery store has a monopoly over some types of sales. The correct measure of concentration, of course, is with respect to a given market but markets are not always distinct from one another. (4) Most firms produce more than one product. When aggregates are used a concentration index may show one, or a few, firms with a small share in the total sales but with a large share of the market for an individual product which is included in total sales. (This point is related to the previous one regarding the definition of an industry). (5) An increase in competition may result from an increase in concentration. It

is easy to imagine some industries which are dominated by a single firm with a number of independents. Organization of the independents may increase competitive behaviour at the same time that it increases the index of concentration. (6) The index of concentration may be correlated more directly with optimum size of firms (or plants) than with the degree of monopoly.¹

In spite of these objections the index of concentration is often a very helpful tool for recognizing potential monopoly situations.

1. Definition of Concentration

(a) Three Levels of Concentration

There are three basic levels on which the concentration of economic power can be measured corresponding to three different levels of business organization. These levels are the plant, the parent corporation and the financial interest group.²

The plant level refers to the technological unit; measurement of concentration at this level is simple both because data are readily available in the Census of Manufactures and because the plants in any given industry are likely to produce a similar range of products. The parent corporation refers to the ownership unit; measurement of concentration at this level is difficult because data are not always available in convenient form and because parent corporations often produce wide ranges of products which cannot be expected to correlate closely with the range of products produced by other such corporations. The financial interest group level refers to "communities of interest", generally centering in a family group or investment organization; relatively little is known about this level of concentration because of the difficulty of finding a meaningful index and because data are difficult to obtain. Qualitative measures of concentration at this level usually involve a study of inter-locking directorates, common banking and trust affiliates, stock and bond ownership and historical relationships.

Plant concentration is less than firm concentration and firm concentration is less than the concentration of financial interests. The plant level of concentration is the easiest to measure and the concentration of financial interests is the most difficult. Our concern in this study is primarily with the control of markets in particular industries and, therefore, the basic measure of concentration used here is the second, or corporation level. While financial interest groups are not dealt with here, there are at least two aspects on which

1 This is not an exhaustive list of the limitations of an index of concentration as a measure of monopoly.

2 Sometimes a fourth level -- the subsidiary -- is added to this grouping but for a variety of reasons it is less fundamental, some subsidiaries' accounts being consolidated with the parent corporation for reasons which could not be expected to reveal differences in economic power.

some information is available. From the Financial Post's Survey of Industrials and from other sources, data on financial holdings of major corporations can be obtained. And from the Financial Post's Directory of Directorships, it is possible to obtain information on the number of directorships held by individuals and the firms in which they are held.

(b) The Measurement of Concentration: Sales, Assets or Manpower?

Once having established the level on which concentration is to be measured the next problem is to determine the most relevant measure of concentration. Should it refer to sales, employment or assets?

In principle these measures would yield the same result if the capital-labour ratio were the same for all firms in any given industry. While this is not always the case the error which would be introduced by making this assumption would not seem to be very large. The real choice revolves around another issue -- the adequacy and meaningfulness of the existing data. A measurement of concentration is usually designed to describe the proportion of a given market controlled by one corporation. The most direct measure is, therefore, one which measures firm output or sales as a proportion of industry output or sales. But it has sometimes been argued that a better measurement of the share of the market can be acquired from data on the share of assets or employment in the industry controlled by one firm. The reason is that some of the larger firms are integrated to a greater degree than smaller firms and that interfirm sales are excluded from the sales of the large consolidated corporations. To the extent that this is true the index of concentration using sales data would understate the true degree of concentration. Against this factor must be set what may be an even greater disadvantage of a measurement in terms of assets or employment, which affects the degree of concentration often unpredictably. Large corporations frequently engage in lines of business outside the definition of industry used. A corporation has to be assigned to the industry grouping in which it is predominantly engaged. The use of consolidated assets or employment would then overstate the degree of concentration in those industries. Sales figures, on the other hand, are often given in terms of specified products so that the exact share of the market can be determined, subject to the qualification about integration made earlier.¹

¹ But it is not always easy to find comparable statistics. Should sales be measured by product or industry shipments? Should they be f.o.b. or c.i.f.?

2. Industrial Concentration in Canada and the United States in the Food Industries.

(a) Canada

The Sources of Data

The basic data are drawn from material prepared for the Commission by the Dominion Bureau of Statistics; the size classification is by employment;¹ the data refer to 1948 and 1956. In a few cases it was possible to obtain data for 1933 from Reynolds, Control of Competition in Canada.

Cumulative Concentration Ratios, 1948 and 1956

Table 1 shows the cumulative concentration ratios of 16 industries engaged in the manufacture of food products. Only a few points in the table are known. For example, we know that in 1956, of the total sales of biscuits and crackers, four firms controlled 69%, seven firms controlled 79%, eleven firms controlled 89% and 17 firms controlled 94%. The points in between are not known exactly.

It is not possible to say, unequivocally, that one industry was more highly concentrated than another. In other words we might conclude, if we took the per cent of output accounted for by the four largest firms, that meat packing was a more highly concentrated industry than biscuits and crackers; yet if we took the per cent of output accounted for by the 11 largest firms the opposite conclusion would emerge. The same limitation applies to an index computed in terms of the number of firms required to account for a given per cent of the output of the industry. (Compare, for example, Vegetable Oil Mills and Processed Cheese). This does not mean, however, that a given concentration index is not meaningful; it only means it must be interpreted with care. Using the per cent of output accounted for by four firms as the index, the order of concentration is roughly as follows. The most highly concentrated industries are listed first. (They are listed in the same order in Table 1.)

1 It might be objected that if a sales concentration index is used, size classification should be by sales; it is possible that some error is involved if the largest firms by employment are not also the largest firms by sales. This error however is likely to be slight. In any case, it would not be avoided by using an employment concentration index. The latter would measure employment concentration more accurately than a sales concentration index would measure sales concentration; but the purpose of the employment concentration index is to measure the share of the market and it would, in the case postulated, measure this less accurately than the sales concentration index.

Prepared Breakfast Foods
 Processed Cheese
 Sugar
 Flour
 Animal Oils and Fats
 Meat Packing
 Biscuits and Crackers
 Condensed Milk
 Vegetable Oil Mills
 Sausage and Sausage Casings
 Fruits and Vegetables
 "Other" Dairy Products
 Bread and Other Bakery Products
 Fish Packing and Curing
 Butter and Cheese
 Macaroni (position uncertain)

From the data in Table 1 it can be ascertained that concentration in food industries in Canada increased from 1948 to 1956. We draw this conclusion after having compared the shares of sales accounted for by the four and eight largest firms in each of the two years. It was necessary to interpolate in order to obtain the estimated shares of the four and eight largest firms when these were not given. Concentration in some industries has increased; in some it has remained constant; and in some it has decreased. Ranked in order of the greatest increase in concentration to the greatest decrease in concentration the industries would be listed as follows:¹

Flour)	
Vegetable Oil Mills	)	Increase (5% or more)
Processed Cheese)	
Biscuits and Crackers)	
Butter and Cheese)	
Condensed Milk	)	Increase (less than 5%)
Meat Packing)	
Fish Packing and Curing)		
"Other" Dairy Products)	
Bread and Other Bakery Products)		
Sugar	)	Insignificant
Fruits and Vegetables	)	change
Prepared Breakfast Foods)	
Animal Oils and Fats	)	Decrease

1 Of the 16 industries listed in Table 1, two are omitted here -- sausage and sausage casings, and macaroni.

TABLE 1. CUMULATIVE PER CENT OF OUTPUT CONTROLLED
BY NUMBERS OF FIRMS, CANADA, 1948 AND 1956

Industry Group	1-5	6-10	Number of Firms				Total
			11-15	16-20	21-25	25-30	
Per Cent (Numbers of Firms in Brackets)							
Prepared Breakfast Foods							
1948	92(3)						100(19)
1956	87(3)	96(7)					100(16)
Processed Cheese							
1948	81(5)		97(12)				100(19)
1956	88(4)	94(7)					100(17)
Sugar							
1933							100(5)
1948	73(3)	99(6)					100(7)
1954	75(3)	97(6)					100(7)
1956							100(7)
Flour							
1948	32(3)	74(9)	80(14)				100(156)
1956	80(4)	90(8)			97(23)		100(59)
Animal Oils and Fats							
1948	86(3)	95(6)					100(9)
1956	65(3)	86(6)					100(16)
Meat Packing							
1933	85(2)						100(120)
1948	70(5)		80(13)		86(22)		100(126)
1956	71(4)		81(12)		89(23)		

TABLE 1. CUMULATIVE PER CENT OF OUTPUT CONTROLLED
BY NUMBERS OF FIRMS, CANADA, 1948 AND 1956

Industry Group	(Continued) Number of Firms						Total
	1-5	6-10	11-15	16-20	21-25	25-30	
	Per Cent (Numbers of Firms in Brackets)						
Biscuits and Crackers							
1948		76(7)	88(13)		96(21)	99(30)	100(41)
1956	69(4)	79(7)	89(11)	94(17)		99(29)	100(34)
Condensed Milk							
1948		62(6)	79(12)		97(23)		100(30)
1956	59(4)	79(9)		37(16)	98(21)		100(25)
Vegetable Oil Mills							
1948	51(4)						100(12)
1956	45(3)	88(6)					100(10)
Sausage and Sausage Casings							
1948			59(14)			80(26)	100(70)
1956	38(3)	53(7)					100(101)
Fruits and Vegetables							
1933	83(2)						100(378)
1948	41(3)	51(8)					100(340)
1956	43(4)		59(12)				
"Other" Dairy Products							
1948	33(4)		71(13)				100(80)
1956	30(3)			82(16)			100(50)

TABLE 1. CUMULATIVE PER CENT OF OUTPUT CONTROLLED BY NUMBERS OF FIRMS, CANADA, 1948 AND 1956
(Continued)

Industry Group	Number of Firms					Total
	1-5	6-10	11-15	16-20	21-25	
Per Cent (Numbers of Firms in Brackets)						
Bread and Other Bakery Products						
1948	33(5)	42(8)		52(17)	56(29)	100(2,748)
1956		37(6)		54(18)		100(2,481)
Fish Packing and Curing						
1948		37(6)		67(19)		100(527)
1956	32(4)		54(11)		68(30)	100(414)
Butter and Cheese						
1948	13(2)	21(7)		24(11)	32(30)	100(1,848)
1956	22(5)				45(30)	100(1,183)
Macaroni						
1948						100(14)
1956						100(15)

The method of interpolation, the level of aggregation in the industry definition, and the dependence on the particular index of concentration used, does not permit confidence in these changes within a range of as much as, say, 5%. On this assumption certainty is possible concerning five industries only. Concentration in flour, vegetable oil mills and processed cheese increased while concentration in prepared breakfast foods and animal oils and fats decreased. On balance more industries were more highly concentrated in 1948 than in 1956.

(b) The United States

An explanation of changes in concentration in Canada can often be aided by a comparison with the United States. If trends in concentration are similar a prima facie case can be made that similar forces were operating in both countries. Did concentration in food industries increase in the United States?

(i) The Source of Data

Information on concentration is much better developed in the United States than it is in Canada. The basic source from which data were obtained is the report of the Kefauver Sub-committee on Anti-trust and Monopoly, Concentration in American Industry, 1957.

(ii) Changes in Concentration in the United States Food Industries, 1947-54

An analysis was made of the changes in shares of four largest firms and the eight largest firms for 36 groups in the food industry. No striking, clear-cut conclusion emerged from the comparison but it appeared likely that on balance concentration had increased slightly.

(c) Concentration in Canada and the United States

Next a comparison is made between concentration in food industries in Canada in 1956 and concentration in food industries in the United States in 1954. The data (Table 2) clearly reveal that food industries in Canada are more highly concentrated than food industries in the United States.¹ This was a general pattern for all industry noted in Rosenbluth's study - Concentration in Canadian Manufacturing Industries - for the year 1948. The most probable reason for greater concentration in Canada is that, because of technological similarities, the optimum size firm is similar in the United States and Canada, but the Canadian market is generally not more than one-tenth the size of the American market. It necessarily follows that if firms are approximately of optimum size in Canada and the U.S., the per cent of total sales accounted for by one firm of optimum size must be larger in Canada than in the United States.

1 Because the definitions of the industries differ it is hazardous to draw conclusions for the individual industries.

TABLE 2. COMPARISON BETWEEN CONCENTRATION RATIOS IN CANADA (1956) AND THE UNITED STATES (1954)

Industry Group (Canada)	4 Largest		8 Largest	
	Canada	United States	Canada	United States
	Per Cent			
Meat Packing	71	39	76	51
Fish Curing & Packing	32	51	45	62
Butter and Cheese	19	(16 ^a 25 ^b)	26	(24 ^a 30 ^b)
Condensed Milk	59	55	75	68
Flour				
Prepared Breakfast Foods	80	40	90	52
Biscuits and Crackers	69	71	82	77
Bread and Other Bakery Products	27	20	41	31
Sugar	86	67	100	86
Vegetable Oil	60	55	94	80

a Butter

b Natural Cheese

3. Concentration in Retailing

(a) A Different Approach

The study on Concentration dealt with up to this point has been concerned solely with manufacturing industries, and has been conducted along commodity or commodity-group lines. One of the limitations of this type of study is that firms have to be assigned to one commodity group even though they produce many products. In other words, such a study cannot always deal satisfactorily with multi-product firms. This limitation is sometimes important for manufacturing firms, but generally the degree of specialization is quite high. However, nearly all large retail firms sell products in many product groups and figures for concentration of sales of particular commodities would not be very meaningful. Another approach is, therefore, required when dealing with retail firms, especially those engaged in the food industries.

Instead of viewing firms as sellers of a wide range of individual products, it becomes necessary to view the institutions themselves as the unit of selection. In other words, from examining the shares in given markets held by firms of different types, the emphasis shifts to the shares of sales of all institutions of a given type controlled by one or a few particular institutions.

(b) The Importance of Chain Stores¹

One of the most significant developments in the food industry in recent years has been the rapid growth in sales of corporate chain stores. Specific figures illustrating this change are provided in Table 3.

(i) The Growing Importance of Chain Stores

Sales of corporate chain stores as a proportion of total retail food sales rose from 29.5% in 1930 to 44.0% in 1958. Because of a decline in relative importance during the war years, the increase was even more remarkable in relative terms following 1946, when they accounted for only 23.8% of sales.

(ii) The Decline in Numbers of Chain Store Units

Despite the rise in the share of total sales by corporate chain stores, the number of stores fell almost to half of the number in 1930 by 1951, while the number of independent stores increased by over 60%. The change in numbers of units is given in Table 4.

(iii) The Growth in Size of the Chain Store Unit

The explanation of the increasing importance in spite of the decline in numbers is found in the enormous growth in the sales volume per store. In 1930 the average size store in corporate chains was \$60 thousand per year, while in 1958 it was \$946 thousand. Apart from the effect of price increases, this growth in sales per unit reflects the growing importance of the supermarket. The comparison between sales per unit of the chains and sales per unit of the independent stores is shown in Table 4.

(iv) The Importance of Chain Store Sales by Provinces

Almost 75% of all chain store sales in 1958 were made in Ontario and Quebec, with Ontario accounting for 53% by itself. The distribution of chain store sales by provinces in 1958 was as indicated in Table 5.

This concentration of corporate chain store sales in the central provinces was the result of both more store units and greater sales per store unit. Chain stores in the central provinces were almost twice the average size in the other provinces. This is shown in Table 5, which gives average sales per store by provinces in 1958.

1 The 1951 Census of Distribution and subsequent D.B.S. reports define a retail chain as an "organization operating four or more retail stores in similar or related kinds of business under the same ownership." We shall refer to this as a corporate chain to distinguish it from a "voluntary chain".

TABLE 3. GROCERY AND COMBINATION STORE SALES, INDEPENDENT AND CHAIN STORES COMPARED.

Year	<u>Independent Stores</u>		<u>Chain Stores</u>		Total
	Amount	% of Total	Amount	% of Total	
	\$'000		\$'000		
1930	285,905	70.5	119,499	29.5	405,404
31	243,589	67.5	117,284	32.5	360,873
32	211,206	66.9	104,619	33.1	315,825
33	218,459	68.8	98,862	31.2	317,321
34	215,669	68.1	100,875	31.9	316,544
35	225,113	68.9	101,418	31.1	326,531
36	245,098	69.5	107,346	30.5	352,444
37	281,571	70.8	116,390	29.2	397,961
38	279,111	70.5	116,850	29.5	395,961
39	280,011	69.3	123,826	30.7	403,837
1940	328,532	70.0	140,806	30.0	469,338
41	395,062	69.6	172,317	30.4	567,379
42	475,366	71.6	188,116	28.4	663,482
43	527,644	74.6	179,833	25.4	707,477
44	569,519	74.1	198,811	25.9	768,330
45	635,636	74.9	212,892	25.1	848,528
46	761,739	76.2	237,677	23.8	999,416
47	873,924	74.3	301,796	25.7	1,175,720
48	980,456	71.7	387,137	28.3	1,367,593
49	1,040,452	70.6	433,950	29.4	1,474,402
1950	1,110,060	68.7	504,579	31.3	1,614,639
51	1,291,877	67.8	612,731	32.2	1,904,608
52	1,338,683	65.6	702,105	34.4	2,040,788
53	1,359,340	63.7	773,220	36.3	2,132,560
54	1,415,980	62.1	863,422	37.9	2,279,402
55	1,466,748	60.4	962,833	39.6	2,429,581
56	1,542,648	58.5	1,096,330	41.5	2,638,978
57	1,641,504	57.1	1,231,251	42.9	2,872,755
58	1,731,204	56.0	1,362,389	44.0	3,093,593

TABLE 4. GROCERY AND COMBINATION STORES - 1930, 1941, 1951
INDEPENDENT AND CHAIN STORES COMPARED

Year	Number of Stores		Sales		Average Sales per Store	
	Chain	Independent	Chain	Independent	Chain	Independent
			(\$'000)	(\$'000)	(\$000)	(\$000)
1930	2,004	21,324	119,499	285,905	59.6	13.4
1941	1,526	26,459	172,317	395,061	112.9	14.9
1951	1,141	33,250	612,731	1,291,877	537.0	38.9
1958	1,447	-	1,368,883 ^a	-	946.0	-

a This sales figure is a later revision of the estimate contained in Table 3.

TABLE 5. CHAIN STORE SALES^a, REGIONAL TOTALS AND
SALES PER STORE, 1958

Region	Sales	Proportion of Total Canada	Number of Stores (Maximum)	Average Sales per store
	(\$ thousand)	(5)	(No.)	(\$ thousand)
Atlantic Provinces	62,843.8	4.6	99	634.8
Quebec	278,411.1	20.3	246	1,131.8
Ontario	728,733.1	53.2	645	1,129.8
Manitoba	47,816.2	3.5	78	613.0
Saskatchewan	34,374.5	2.5	80	429.7
Alberta	87,875.5	6.4	120	732.3
British Columbia	128,828.6	9.4	179	719.7
Canada	1,368,982.8	100.0	1,447	946.0

a The sales figures are a later revision of the estimates contained in Table 3.

It is, of course, to be expected that the central provinces would predominate in the total sales of chain stores because of population and income concentration there. Nevertheless, the proportion of chain store sales to total grocery and combination store sales was higher in Ontario than in the other provinces. In 1958, 59% of total sales in Ontario were made by chain stores while most other provinces were below the average for Canada as a whole of 44.0% in 1958. The proportions for all regions are given in Table 6.

(c) Concentration of Chain Store Sales

(i) Definition and Significance

Concentration can be determined either in terms of the shares held by individual chain stores in total chain store sales, or the shares of total independent plus chain store sales. The criterion on which judgment between these two measures should be based is whether or not the elasticity of substitution in consumption between chain store sales and independent store sales is high or low. In one sense the elasticity is low: chain stores, especially the large supermarkets, stock a wider range of goods than most independent stores, so consumers buy convenience as well as goods. There are at least two other factors which separate the markets: loyalty and location. Nevertheless, consumers are not persistently willing to pay too high a price for loyalty and convenience, so there is a limit to the price differentials between the two types of stores. It is, therefore, safer to calculate concentration ratios in terms of both the above measures.

TABLE 6. PROPORTION OF SALES OF GROCERY AND COMBINATION FOOD STORES DONE THROUGH CHAINS, BY REGIONS, 1958

Region	Proportion %
Atlantic Provinces	22.2
Quebec	32.2
Ontario	58.9
Manitoba	40.6
Saskatchewan	28.0
Alberta	44.0
British Columbia	46.4
Canada	44.0

The problem of the region within which concentration should be measured has already been discussed. The so-called big five chain stores do not operate in all parts of Canada. In this study, however, we deal with shares throughout Canada as a whole to be consistent with the other data on concentration.

(ii) The Big Five

In Table 7, the sales of the five largest corporate food chains in Canada are compared with the sales of all corporate food chains and with total sales of grocery and combination food stores for the year 1957. Considerable caution is required in accepting these figures as even good approximations of "true" concentration -- the main limitation being the importance of regional sub-markets. Concentration figures for Canada as a whole understate "true" concentration in some regions and overstate it in others.

TABLE 7. PROPORTION OF SALES ACCOUNTED FOR BY THE FIVE LARGEST CORPORATE CHAINS, CANADA, 1957

Group	Sales	Five Largest Chains as Per Cent of Total
	(\$ million)	(%)
Five Largest Corporate Food Chains ^a	1,084	-
Total Sales of Corporate Food Chains	1,231	88
Total Sales of All Grocery and Combination Food Stores	2,873	38

a In order of total sales in 1957: Dominion, Loblaws, Safeway, A & P and Steinberg's.

COMPARISON OF FOOD PRICE LEVELS IN MAJOR CITIES OF CANADA

The indexes given in the following table were prepared by the Dominion Bureau of Statistics to indicate the extent of the difference in the average level of retail food prices as between major Canadian cities. The indexes have been calculated on the basis of prices collected in each of the cities, weighted in accordance with average urban food expenditures as contained in the weighting diagram of the Canada Consumer Price Index. Because of the differences in food purchases in each city, it is impossible to calculate precisely accurate measurements. The closest approximation would be derived, for example, from the use of both Winnipeg and Vancouver weights in the calculation of the Winnipeg-Vancouver comparison, rather than the use of average urban food expenditures. However, the calculation of a number of indexes, using weights peculiar to each city, did not produce indexes significantly different from those attached.

In addition to the problem of weights, the difficulty of obtaining prices for identically the same description of each food item in each city is of some consequence. While considerable care has been taken to eliminate differences due to variations in quality of the items priced, it was impossible to eliminate all such variations. This is particularly so in the case of beef items, where variation in grades as between cities undoubtedly affects the comparison.

While these indexes have been expressed in terms of Toronto = 100 and Winnipeg = 100, the selection of either Toronto or Winnipeg as the base city has no significance. The indexes could have been expressed on the base of any of the cities included.

SPATIAL RETAIL FOOD PRICE INDEXES, 1956, 1957 AND 1958Toronto = 100

	<u>1956</u>	<u>1957</u>	<u>1958</u>
Halifax	102	102	103
Saint John, N.B.	104	104	103
Montreal	100	101	101
Ottawa	100	101	101
Winnipeg	103	102	103
Regina	106	106	107
Saskatoon	107	106	107
Calgary	104	103	104
Edmonton	103	103	103
Vancouver	107	107	107

Winnipeg = 100

	<u>1956</u>	<u>1957</u>	<u>1958</u>
Halifax	99	100	99
Saint John, N.B.	101	102	100
Montreal	98	99	98
Ottawa	97	99	98
Toronto	97	98	97
Regina	104	104	103
Saskatoon	105	104	104
Calgary	101	101	100
Edmonton	100	101	100
Vancouver	105	105	104

FOOD PRICES IN RETAIL FOOD STORES
TORONTO AND VANCOUVER

Section I - Introductory

(a) Purposes of the Study and its Organization

This study was based upon a special analysis of retail food prices undertaken in a search for answers to the following questions:

- (1) Are food price levels generally lower or higher in one type of store as compared with another type?
- (2) Do food prices differ according to the volume of sales?
- (3) Do food prices differ according to whether stores are located in low income areas or in high income areas?
- (4) Do identical items tend to be priced the same in all the food stores of a market area?
- (5) Are differences in prices of food items due to differences in qualities and grades?
- (6) Do stores having high price levels sell only high quality goods?

In pursuit of the analysis necessary to answering the above questions, the study broke into two main parts. The first part which is dealt with in Section II of this report required organization of price material so that store price levels could be related to type of stores, volume of sales and income area. These factors are referred to in the first three questions. The second part of the study, the results of which appear in Section III, involved an analysis of prices of food items by type of store. Details of the sources of data and of the procedures used in Sections II and III are set out next under (b) in this Introductory Section.

(b) Sources of Data and Procedures

The Prices Division of the Bureau of Statistics collects information on retail food prices in cities and towns across Canada. These prices are collected regularly by employees of the Bureau of Statistics for chain stores on the first Friday of each month and for independent stores in the first week of each month. The directions given to the collectors of prices include careful definition of the kind of item and the quality, and the stores in which prices are to be collected. The same stores are visited each month. These stores compose a judgment sample, chosen so as to be representative of the shopping

conditions in each city, both as to size and type of store and its location. The price report for each store, with the exception of chain store outlets, makes possible identification of its type, location and sales volume.

The prices recorded in the above-described collection process were the source of price information used in this study. Because the study was of an exploratory nature and resources available were limited the analysis was restricted to two time periods, namely, the months of May and June 1958. For the same reasons, the analysis of the difference in levels of prices between stores was confined to the situation in two cities only, viz. Toronto and Vancouver. These two large urban centres were selected, first, because for each, substantial developments in food retailing had taken place and, second, because they were well separated geographically.

The judgment sample used as a source of price data for this study is small. While the Bureau of Statistics selects the sample specifically for the purposes of consumer food price index computations, confidence in its use for purposes of this particular study was supported by the relative consistency shown in the direction of month to month price changes and subject to qualification, in the general similarity of the patterns of price levels in both months and in the two cities included.

The statement on procedure which follows contains a description of the method of store identification and classification and an account of the method used in calculating store average price levels. The store classification adopted for the Section II analysis also applied to the analysis in Section III. However, the Section III price variation analysis was carried out for Toronto stores only and there were differences in the coverage of food items. The differences are referred to in the later paragraphs of this description of procedure.

In the procedure of store classification the first step was an identification of each store as a corporate chain or as an independent. Voluntary food chain outlets were included with the independent stores. Each independent store was further identified as a self-service or non-self-service store and then classified according to its volume of sales.

In the Bureau of Statistics records the chain stores are identified only through their central office in the city and, therefore, their prices could not be related to income areas. Accordingly, chain store prices were not used in the analysis of the effects of size and of income area. Generally, chain stores operate on a policy of central office pricing with limited discretion left to store managers on the pricing of perishables. All of the stores of the corporate chains were self-service and, therefore, they were grouped as large-volume self-service outlets.

Each independent store was located on the Census map of the city. The characteristics of each location were then taken from the Census descriptions in terms of median rents and earnings and the pro-

portion of owner-occupied to rented dwellings and each was designated as high, medium or low income area.

Rather striking city differences emerged at this stage. In Vancouver the areas in which the stores were located could be readily classified by income groups. In Toronto the areas appeared much more heterogeneous as to income groups and thus more difficult to separate into income levels. Following the work of income classification, the results were checked with persons familiar with the cities and the descriptions confirmed.

The categories for independent stores and voluntary chain stores by type and volume of sales were set up as follows:

<u>Store Type</u>	<u>Floor Space</u>
Supermarket	3,500 and more square feet
Large Self-Service	2,500 to 3,499 square feet
Self-Service	1,500 to 2,499 square feet
Other	Less than 1,500 square feet
<u>Volume of Sales</u>	<u>Dollar Volume</u>
Large Volume	\$250,000 and more
Medium Volume	\$100,000 to \$249,999
Small Volume	Less than \$100,000

Indexes of store price levels (given in Tables 5(a) to 8 (b) inclusive) were derived by multiplying the price of each item by the weighting given to it in the food group of the Consumer Price Index. The aggregate of these items was then expressed in index form as a "store price level". The bases for calculation of the indexes were the aggregates of the items for the chain stores in each of Toronto and Vancouver for each of the months of May 1958 and June 1958. This calculation of store price levels was made separately for groceries and for meats. Meats included fresh and cured meats and poultry, and groceries covered all other food items including canned salmon. Fresh fish prices were not used in the analysis because of the very few quotations available in the price reports.

The necessity for calculation and presentation of store price levels separately for groceries and for meats is explained by the procedure of collection. Meat prices are obtained from the meat departments of chain stores and combination stores (independent stores selling both groceries and meats) as well as from butcher shops which sell mainly meat. Grocery prices include those from chain and combination stores and also those from grocery stores not having butcher shops. The separation of groceries and meats for this study therefore permitted comparisons of the different price levels of the two groups of items in store types selling both. However, the effect on the level of prices generally for stores handling only one group of items as compared with the same type and size of store handling both cannot be distinguished.

The detailed analysis in Section III on prices of food items by type and size of store was limited to price quotations available for Toronto stores for May and June of 1958. While the same basic source of price material was drawn upon, certain changes were made in the selection of items priced. Insofar as it was possible to identify them, the analysis was confined to prices of foods of domestic raw material origin. Therefore, obviously imported items like tea, coffee, oranges and bananas were excluded. Again, as for the Section II analysis, fresh and frozen fish items could not be included because of the limited number of price quotations available. However, it was possible to include prices for some items not included in the "store price level" analysis since some food items of domestic raw material origin are priced regularly in monthly reports to the Bureau of Statistics although they are not used in computing the Consumer Price Index. These, therefore, were not used in calculating "store average prices" (there being no weighting factor), but were included in the item price study in Section III.

Section II - Price Levels by Type and
Size of Store and Income Area

The distribution of stores by income areas as determined by the methods described in Section I (Procedure) is given in Tables 1 and 2.

TABLE 1. FOOD STORES PRICED IN MAY AND JUNE, 1958, BY TYPE OF STORE, BY VOLUME OF SALES AND BY INCOME AREA, TORONTO.

Type of Store	Volume of Sales	Income Area			
		High	Middle	Low	Total
<hr/>					
<u>Chains</u>					9
<hr/>					
<u>Independents</u>					
Supermarket	Large Volume	2	-	-	2
Self-Service	Large Volume	3	-	-	3
	Medium Volume	1	2	1	4
	Small Volume	-	-	1	1
Other	Medium Volume	-	1	-	1
	Small Volume	-	-	2	2
		<hr/>	<hr/>	<hr/>	<hr/>
Total Independents		6	3	4	13

TABLE 2. FOOD STORES PRICED IN MAY AND JUNE, 1958, BY TYPE OF STORE, BY VOLUME OF SALES AND BY INCOME AREA, VANCOUVER

Type of Store	Volume of Sales	Income Area				Total
		High	Middle	Low	Middle	
<u>Chains</u>						8
<u>Independents</u>						
Self-Service	Large Volume	1	-	1	-	2
	Medium Volume	-	-	2	2	4
	Small Volume	2	1	-	1	4
Other	Medium Volume	-	-	1	1	2
	Small Volume	-	2	3	1	6
Total Independents		3	3	7	5	18

The ratio of corporate chain stores to independent stores contained in the price reporting sample was different in Toronto, where 9 corporate chain stores and 13 independents were priced, and Vancouver where 8 corporate chain stores and 18 independents were priced. The distribution of stores by type and by volume of sales differed also as between these cities. In Toronto only 3 out of the 13 independent stores were non-self-service, while in Vancouver 8 out of 18 were non-self-service. Only 3 small volume stores were priced in Toronto but 10 were priced in Vancouver.

Differences between the cities in the distribution of the sample of stores price reported also became apparent when the tables were summarized by volume of sales only (Tables 3 and 4).

TABLE 3. INDEPENDENT FOOD STORES PRICED IN MAY AND JUNE, 1958, BY VOLUME OF SALES AND INCOME AREA, TORONTO.

Volume of Sales	Income Area			Total
	High	Middle	Low	
Large Volume	5	-	-	5
Medium Volume	1	3	1	5
Small Volume	-	-	3	3
Total	6	3	4	13

TABLE 4. INDEPENDENT FOOD STORES PRICED IN MAY AND JUNE, 1958,
BY VOLUME OF SALES AND INCOME AREA, VANCOUVER

Volume of Sales	Income Area				Total
	High	High Middle	Low Middle	Low	
Large Volume	1	-	1	-	2
Medium Volume	-	-	3	3	6
Small Volume	2	3	3	2	10
Total	3	3	7	5	18

In Toronto the volume of sales was in direct relation to the income area. All the large volume stores were in the high income areas and all the small volume stores were in the low income areas with the medium volume stores preponderant in the middle income areas. The volume of sales also appeared to be in direct relation to the type of store as defined for the purposes of this study. Two of the large volume stores were supermarkets and all the large volume stores were self-service. Four out of the five medium volume stores were self-service but only one out of the three small volume stores was self-service.

In Vancouver the majority of the independent stores were located in the low income and low middle income areas and more than half the stores priced were small volume stores. Most of the stores in the high income and high middle income areas were small volume stores which were distributed evenly through all the income areas.

These contrasts in the types of stores, their volume of sales and location undoubtedly reflect a real difference in the pattern of retail trade in the two cities. However, the characteristics used to describe areas in terms of income levels resulted in the older downtown areas and the business sections of the cities being classified as low income areas. In the sample for Vancouver, however, there were a larger number of downtown food shops. The assumption implicit in relating a store to the income level of the locality was that people tend to shop in the neighbourhood in which they live. This assumption might be modified considerably if a large number of retail outlets were concentrated in a business section or a suburban shopping centre. To the extent that such concentration occurred the income level of the immediate neighbourhood might be of little or no importance in determining the level of prices charged in the store. The difference in the type of stores, their volume of sales and their location by income areas between Toronto and Vancouver not only pointed up this field as an interesting one for investigation but also showed up very clearly the difficulty of pursuing it with the small sample of stores available

from Bureau of Statistics records. It is emphasized here again that this sample was not designed for the particular purposes of this study. A sociological as well as an economic study of the city would be necessary to define the various localities of each city in terms of income level and a further marketing study to describe the area from which a store or type of store generally draws its customers.

The store price levels for all chain stores for both groceries and meats were lower than the price levels for all independent stores for both Toronto and Vancouver for both months. (Table 5(a) and 5(b) and 7(a) and 7(b)).

TABLE 5(a). STORE PRICE LEVELS BY TYPE AND SIZE OF STORE, TORONTO, GROCERY ITEMS

(Average Chain Store Price Level in May 1958 = 100 and June 1958=100)

Type of Store	Volume of Sales	May	June	Per Cent Change May to June ^b
Chains	All	100.0	100.0	- 1.3
Independents	All	104.8	105.7	- 0.4
Supermarkets	Large Volume	101.7	103.5	+ 0.4
Self-Service	All	104.3	105.3	- 0.4
	Large Volume	102.6	104.8	+ 0.8
	Medium Volume	105.6	105.7	- 1.2
	Small Volume	a	a	-
Other	All	107.8	107.9	- 1.2
	Medium Volume	a	a	-
	Small Volume	107.8	108.3	- 0.8

a One store only. b The change in the absolute store price level.

TABLE 5(b). STORE PRICE LEVEL BY TYPE AND SIZE OF STORE, VANCOUVER, GROCERY ITEMS.

(Average Chain Store Price Level in May 1958= 100 and June 1958= 100)

Type of Store	Volume of Sales	May	June	Per Cent Change May to June
Chains	All	100.0	100.0	- 3.1
Independents	All	103.8	104.7	- 2.2
Supermarkets	Large Volume	-	-	-
Self-Service	All	103.8	104.7	- 2.2
	Large Volume	101.9	102.3	- 2.6
	Medium Volume	103.8	104.7	- 2.2
	Small Volume	104.5	106.2	- 1.4
Other	All	103.4	103.9	- 2.6
	Medium Volume	100.4	101.2	- 2.3
	Small	104.5	105.0	- 2.6

TABLE 6(a). STORE PRICE LEVEL IN INDEPENDENT STORES BY VOLUME OF SALES, TORONTO, GROCERY ITEMS.

(Average Chain Price May 1958 = 100 and June 1958 = 100)

Volume of Sales	May	June	Per Cent Change
Large Volume	102.2	104.4	+ 0.8
Medium Volume	106.1	106.1	- 1.2
Small Volume	106.5	107.9	-

TABLE 6(b). STORE PRICE LEVEL IN INDEPENDENT STORES BY VOLUME OF SALES, VANCOUVER, GROCERY ITEMS.

(Average Chain Price May 1958 = 100 and June 1958 = 100)

Volume of Sales	May	June	Per Cent Change
Large Volume	101.9	102.3	- 2.6
Medium Volume	102.6	103.5	- 2.2
Small Volume	104.5	105.4	- 2.2

TABLE 7(a). STORE PRICE LEVEL BY TYPE OF STORE, VOLUME OF SALES, TORONTO, MEAT ITEMS.

(Average Chain Store Price May 1958 = 100 and June 1958 = 100)

Type of Store	Volume of Sales	May	June	Per Cent Change
Chains	All	100.0	100.0	+ 2.3
Independents	All	100.6	102.4	+ 4.1
Supermarkets	Large Volume	105.7	105.9	+ 2.5
Self-Service	All	102.6	103.6	+ 3.3
	Large Volume	102.8	102.4	+ 1.9
	Medium Volume	103.6	105.4	+ 4.1
	Small Volume	a	a	-
Other	All	98.8	99.2	+ 2.8
	Medium Volume	a	a	-
	Small Volume	99.4	99.8	+ 2.8

a One Store only

TABLE 7(b). STORE PRICE LEVEL BY TYPE OF STORE AND VOLUME OF SALES, VANCOUVER, MEAT ITEMS

(Average Chain Store Price May 1958 = 100 and June 1958 = 100)

Type of Store	Volume of Sales	May	June	Per Cent Change
Chains	All	100.0	100.0	+ 4.1
Independents	All	104.4	101.0	+ 0.7
Supermarkets	Large	a	a	-
Self-Service	All	102.3	99.3	+ 1.0
	Large Volume	a	a	-
	Medium Volume	103.3	100.1	+ 0.9
	Small Volume	100.6	96.8	+ 0.1
Other	All	104.9	101.6	+ 0.9
	Medium Volume	a	a	-
	Small Volume	105.0	101.9	+ 1.0

a One Store only

TABLE 8(a). STORE PRICE LEVEL IN INDEPENDENT STORES BY VOLUME OF SALES, TORONTO, MEAT ITEMS

(Average Chain Price May 1958 = 100 and June 1958 = 100)

Volume of Sales	May	June	Per Cent Change
Large Volume	104.0	103.8	+ 2.1
Medium Volume	101.1	103.0	+ 4.2
Small Volume	99.7	100.3	+ 2.9

TABLE 8(b). STORE PRICE LEVEL IN INDEPENDENT STORES BY VOLUME OF SALES, VANCOUVER, MEAT ITEMS

(Average Chain Price May 1958 = 100 and June 1958 = 100)

Volume of Sales	May	June	Per Cent Change
Large Volume	107.4	104.4	+ 1.1
Medium Volume	103.3	99.8	+ 0.6
Small Volume	104.2	101.0	+ 0.9

In Toronto the chain stores and the large volume independents showed lower price levels in groceries than the medium sized and small store. In Vancouver the difference between the chain stores and the large independents was as wide as the difference between the small volume independent outlets and the large and medium sized ones.

Although meat price levels were lower in chains than in independent stores the pattern in independent stores was considerably different for meats than for groceries. In Toronto the highest average price levels for meats were found in the supermarkets and the lowest price levels, even lower than the chain store meat price levels, in the volume and small volume non-self-service stores. In Vancouver the highest meat price levels were also found in the large volume supermarkets but the lowest price levels were in the small volume self-service stores. This difference is likely attributable to quality differences, particularly for beef and lamb.

The last point in the analysis of store price levels was the question of the relation of these to the income levels prevailing in the areas in which the stores were located. On this point, the results yielded no conclusive evidence as to variation in price levels in food stores as between income areas. In Toronto the prices level in stores within each income area was lower in the larger volume stores and higher in the small volume ones. Because all the large volume stores were in high income areas, the lowest store price levels were found in the high income areas. In Toronto, therefore, volume of sales and income level showed a consistent positive relationship from high income area large volume stores to low income area small volume stores. Although for both months the price levels for the stores in the middle income area were higher than for the stores in the low income area, the differences were not great. In Vancouver also the price level by income areas appeared to be strongly affected by the distribution of the large volume stores. The highest store price levels were recorded in the high middle income area, which had only small volume stores. For the other three income group areas, store price levels were generally close.

Section III - Prices of Food Items by Type and Size of Store

In Section II it was demonstrated that store type and volume of sales were related to the general food price level in a retail store. Because prices of food products only were used, broader questions such as the effect of extending the range and variety of products offered in grocery stores was not taken into account, nor were differences in store services offered. The question as to whether or not the stores able to sell food at lower average prices have been aided in doing so by the profitability of non-food items and conversely the question as to whether or not the higher priced food stores offer additional services with the food they sell could not be answered from the data available.

Another aspect of this study related to price comparisons for the same commodity items within a market area as between stores of

similar types.

As in the preceding analysis of average store prices prices in chain stores again tended to be lower than in independents. Of the 53 items compared for Toronto, only 18 items in May and 17 in June, 1958, were priced the same or lower in independents than in chain stores. Of these same or lower priced items in the independent stores, 13 were lower in both months. Prices of 30 of the items were higher in independent stores in both May and June; seven items were higher by 5% or more in both months, 15 items were higher by less than 5% in both months and seven items were higher by more than 5% in one month and by less than 5% in the other.

Comparisons of individual items in different types of stores did not disclose clearly any definite pricing patterns. In the 13 items referred to above for which prices in independent stores were the same price or lower-priced in both months, potatoes were the only unprocessed food item. Among the processed items were evaporated milk, cake mixes, pickles, shortening, canned sardines and canned lobsters, bacon, sausages and bologna. Quality differences related to brand and taste preferences probably played a part in sales of these items and, although in the price collection process endeavours are made to be as specific as possible in this respect, the problem of definition is difficult and, even when the specification can be made, price for the exactly corresponding quality cannot always be obtained. Thus, in part, the lower prices prevailing among the items under discussion may be for goods of lower quality or of less well known brands that have not commanded market prestige. Among the 13 items there were, however, graded products like canned and frozen fruits and vegetables for which grade differences as an explanation of price difference were ruled out by the exacting specification of grade used in the price collection process.

Three of the items in the 13 referred to in the preceding paragraph, namely, evaporated milk, sardines and canned lobsters, shared with milk, butter and sugar the characteristic of consistently low price variation in the two types of stores, chain and independent. Milk and butter prices have been affected by regulation. The limited price variation found for milk and butter was attributed in part to marketing board and "floor price" controls. Sugar and flour, both dietary staples and produced by industries of relatively high concentration of firms, showed low price variation, not only as between stores, but also as between types of stores.

Of the seven items that were 5% or more higher in price in independent stores than in chain stores in both months, three of the items were comparable by grade and quality from store to store -- pink salmon, frozen peas and frozen beans. Neither cheddar cheese nor hamburger are sold by grade at the retail level so that the price differences here may have been due to differences in quality. Fresh tomatoes in May and June included both domestic hothouse and imported tomatoes. Thus the price variation for this item in June, for example, was over 10% in both types of stores.

Average meat prices were higher in independent stores for many items including hamburger as noted above, and for sirloin and round steak and rib roast of beef. Pork chops and pork shoulder roast were also higher. Five of the 15 items higher in both months in independents by less than 5% were items similar in quality. These items were Grade A Large eggs, sockeye salmon, tomato juice, canned tomatoes and frozen strawberries.

Independent store prices were not only higher on the average than chain store prices but also varied more widely. None of the price items showed "no variation" in the independent stores; nearly 40% of the items in chain stores showed from less than 5% to zero price variation, while only 30% to 33% of the items had a price variation of less than 5% in independents. In May, nine items or 17% of the items priced in chain stores had a price variation of 10% or more as compared with eight items in independents. However, in June, 11 items in chains compared with 15 items in independents had price variations of more than 10%.

Although price variation in chain stores as disclosed in this analysis was less than in independent stores it takes on more significance in relation to chain price levels. This is because it was found to exist between stores of the same type with similar store price levels. In contrast to the similarities in type among chain stores, independent stores were composed of very unlike outlets, both as to size of store and volume of sales, as well as the distinction between self-service and other. It would have been surprising to find the same uniformity of pricing among the heterogeneous group of independent stores as that prevailing among the more homogeneous chain stores.

TRANSPORT COSTS AS A FACTOR IN PRICE SPREADS OF FOOD PRODUCTS

1. The Significance of Rising Transport Costs

At the outset, it is desirable to point to the need for maintaining a clear distinction between increasing transport rates (or prices) which accompany, but do not chiefly cause, a rise in prices of goods in general, and increasing transport rates which contribute specially and directly to rising prices. In the case where all costs are rising together, public policy may prescribe monetary medicine and no special attention to the transport industry at all. In the other case, of prices which rise directly as a result of pressures from the transport industry, the proper concern of public policy may be the rate structure, competition among various forms of transport, or management or labour problems within the major transport firms.

Within the past 10 years, increases in the transport cost per unit for food products consumed in Canada (excluding exports), have outstripped the increases in retail prices of food. Table 1 makes this explicit in the case of railways. The general level of freight rates in 1957 was close to 79% higher than in the latter part of 1949, while the consumer price index for food was about 17% higher. The sharpness of the contrast is reduced if we realize certain limitations of an index of general freight rates. In the first place, a general rate index does not take account of the increasing proportion of traffic moving under competitive rates and agreed charge rates negotiated between the railways and shippers. As these rates are lower, the "effective" rate increases have been less than would appear from an index based on "horizontal" or across-the-board increases granted from time to time by the Board of Transport Commissioners. Secondly, an index of this type takes no account of the changing composition of traffic; some commodities on which rail freight charges are particularly high may be finding their way to less costly carriers, or may even be manufactured closer to market as a result of the increasingly heavy charges. Thirdly, a general index takes no account of exceptions to the general increases. The exceptions in food traffic are important: western grain, which has been entirely exempt from the increases; and potatoes, which have been partially exempted. Finally, a general index of rail freight rates has application not only to food, but to other products as well.

The effects of increasing resort to competitive rates and the changing composition of rail traffic are more accurately accounted for in an index of the estimated average revenue of the railways for handling a ton of food one mile. Between 1949 and 1957, the average revenue per ton-mile of food freight (Table 1) increased 43% as compared with a 17% increase in the consumer food price index. The average railway revenue per ton of food freight moved (regardless of distance) has increased even more substantially, from \$7.82 in 1949, to \$12.56 in 1957, or 60.6%. Revenue per ton of freight trucked appears to have risen at least as much. Assuming that the amount of rebilling of freight, which

TABLE 1. COMPARISONS OF INDEXES OF RETAIL PRICES FOR FOODS OF DOMESTIC ORIGIN, AVERAGE RAIL REVENUES PER TON-MILE FOR FOOD AND RAIL FREIGHT RATES, 1949 TO 1957.

(1949 = 100)

Year	Food Prices	Average Revenue per Ton-Mile	Rail Freight Rates ^a
1949	100.0	100.0	100.0
1950	101.4	118.1	114.6
1951	116.9	130.2	123.6
1952	116.4	122.4	137.4
1953	112.0	155.2	158.5
1954	110.4	144.8	161.0
1955	110.3	130.2	161.0
1956	111.1	137.1	166.7
1957	116.8	143.1	178.9

a Annual indexes prepared by time-weighting intra-year changes in rates applicable to raw food materials and food products.

inflates the tonnage statistics, is roughly the same in the two years, we can conclude that the rail freight cost per ton of food produced and consumed in Canada has increased much more rapidly than retail prices of food in general.¹

There are three possible reasons for the substantial increase in transport cost relative to consumer prices of food.

(1) The general inflation of prices contributed to the increase in transport costs. If the cost to the public had not been allowed to rise through the medium of increases in freight rates, it would have done so through substantial deficits of publicly owned railways and cost-saving measures by the railways, which would have adversely affected rail service. Truckers would have been forced to compete with unremunerative rates charged by the railways, and trucking services would also have been curtailed. Inflation was a force that could not be resisted simply by an attempt to hold the line in respect to freight rates. During a time of intensive investment in resource development and through periods of labour shortage, the transport industry was certainly faced with rising costs, and competed directly in hiring and purchasing with the most conspicuously booming industries. A series of freight rate increases, beginning with a 21% general increase effective April 8, 1948 (the first general increase in 27 years), reflected the pressure of inflationary forces on the cost position of the railways.

(2) Another possible source of increasing transport cost has been the change in the composition of traffic. If there was a shift towards heavier traffic in highly-rated products, or an increase in average

¹ Generally, the research studies deal with the period 1949 to 1957 or 1958. See reference in Volume I of the Report.

haul for all food products, or an increase in the amount of traffic moved by carriers providing expensive but possibly also valuable services, such as the airlines, then there would be a tendency towards increasing transport cost per ton-mile and per ton.

(3) Finally, there may have been changes in the standard of service provided by all carriers, so that increasing transport costs actually represent charges for an improved service. The tendency has been in this direction. The average speed of freight trains has increased in the past 10 years, airlines offered air cargo service to an increasing number of points, and entirely new types of service, such as "piggyback" truck trailers carried by rail have been offered to the public since 1949. All such developments in transport service must be taken into account in an appraisal of increases in transport charges.

Changes in the composition of traffic may cause increases in transport cost. Sometimes the frequent shipping of small consignments at greater expense reduces a consignee's inventory carrying costs and also total costs, as compared with infrequent large shipments which necessitate carrying larger inventories. Improved services offered by carriers in the form of speedier transport and better handling may also improve the quality of the goods purchased by the consumer and reduce costs of waste and damage. The growth of huge urban centres may increase transportation costs appreciably, because of the greater distance from which produce of the land must be brought to satisfy the larger market. These are all sound reasons for increases in transport cost. It is difficult to appraise the effects of such developments in the past 10 years or to quantify them, but in approaching the subject of increases in food marketing costs, it will facilitate sound judgment if they are kept in mind.

The starting point of this investigation is the development of estimates of aggregate costs of transporting food in Canada. The total costs of transporting Canadian food for domestic use are estimated by different types of carriers, viz: truck, rail, airline, and ship. The extent of effective competition amongst the carriers will be noted, since the existence of competition may help to keep transportation charges low and carriers efficient. The conclusion of this section is that truck-rail competition has been substantial, and has to some degree held transport charges down. Second, changes in composition of traffic will be examined and this part of the study will point out the need for certain additional information on this subject. Finally, some comments will be made regarding statistical information which will assist in appraising trends in efficiency of transportation of food.

2. Transportation of Food by Truck, Rail, Air and Water

Canadians spent approximately \$245 million in 1957 for the transport of food produced and consumed in Canada (excluding exports and imports). In 1949 they spent \$109 million. The increase in aggregate cost over the eight years amounted to 125%. Table 2 summarizes

TABLE 2. ESTIMATED TOTAL TRANSPORT COSTS FOR DOMESTICALLY PRODUCED AND CONSUMED FOOD PRODUCTS, BY TYPE OF CARRIER, 1949 TO 1957.

Year	Rail	Truck	Water	Air	Total
(millions of dollars)					
1949	58	48	2	1	109
1950	58	51	2	1	112
1951	66	64	3	1	134
1952	76	89	3	3	171
1953	75	114	3	5	197
1954	71	113	3	3	190
1955	70	138	3	8	219
1956	79	166	3	6	254
1957	78	159	3	5	245

the estimates of total costs of food transported by the various media of transport for the years 1949 to 1957.

The railroads are still the big bulk long-haul carriers of food freight, but in 1957 they handled a smaller volume of this traffic as measured by ton-miles than they did in 1949. It is impossible to obtain a really good estimate of truck traffic and revenue collected by truckers from transporting domestically produced and consumed food back in 1949. It is estimated that there has been an increase of nearly 80% in ton-miles of food handled by truck. This may be subject to some considerable margin of error inherent in the basic assumptions back of the estimating procedure, but there is no reason to doubt the general conclusion that there has been a substantial shift in food traffic from railways to truckers.

The estimate of revenue to truckers from handling food in 1949 (\$48 million) should be treated at best as an approximation.¹ The estimated revenue for 1957 - \$159 million - is another approximation, but of greater reliability. However, the accuracy of the estimates is believed to be sufficient to warrant the conclusions that: (1) from the standpoint of revenues collected by the carriers, trucking is by far the most important medium of transport for food products when exports and imports of food are excluded from consideration; and (2) that revenues collected by the trucking industry from the handling of food tripled between 1949 and 1957. The trucking industry, therefore, is by far the most significant carrier of food, and the one whose charges and operations are most worthy of study.

1 The estimated revenue from trucking food in 1949 is based on the ton-miles of truck traffic, multiplied by a revenue per ton-mile after adjustment for changes in revenue per ton of all commodities trucked, as shown in the D.B.S. publication, Motor Carriers, Freight-Passenger.

Airlines traffic in food products has substantially increased since 1949, as evidenced by an increase in revenue from \$1 million to \$5 million in 1957. Food carried in air cargo by 1957 still amounted to only a little over 2% of the revenue collected by all carriers from transport of food.

Coastwise trade in food products consists very largely of grain. In fact, over 88% of the total cargo-tons of food handled between Canadian ports in 1956 consisted of grain for use as human food. In Table 2 only grain (consumed as food) and a limited amount of canned food products are taken into account because of the scarcity of detailed information on food products moving in a coastwise trade. Based upon the data available, though, it is apparent that water transport has barely maintained its share of total revenues from traffic in foods of Canadian origin used for domestic consumption.

Railway Revenues from Handling Food

The year-by-year performance of the railways in transporting domestically produced and consumed food is shown in the estimates set out in Table 3. Traffic has fallen but revenue has climbed. Between 1949 and 1957, total revenue from freight and express increased from \$58.5 million, to just under \$78 million, or one-third. During the same period, volume of freight (ton-miles) declined by 5%. Average revenue per ton of freight rose by over two-thirds. In contrast to the rise in total revenues were the sharp drops in revenues from less-than-carload freight, and in revenues from transportation of milk in passenger trains.

The rise in total rail revenues from handling food (excluding exports and imports) was irregular but distinctly upward over the period, and average revenues per ton and per ton-mile rose in a rather similar pattern. The decline in volume of food handled by rail was irregular too, and had a marked effect on fluctuations in total revenue. Freight rates rose. Traffic shifted away from the railways. Those were the two outstanding developments in rail traffic in food between 1949 and 1957. Although these factors tended, in part, to offset each other, total rail revenues rose over the decade, reaching a peak in 1956 and dropping slightly in 1957.

Trends in volume and revenues earned by the railways varied considerably from one product to another. From 1949 to 1957 marked downtrends in volume occurred for shipments of fish, fresh vegetables, and apples, and revenues hardly managed to keep up to 1949 levels. Volume of traffic in meat products, potatoes, and canned foods, however, has shown a distinct upward trend, and revenues from these commodities even more so. Hogs, and sugar and confectionery also have moved higher over the decade, but with sharp intervening declines.

Trends in some of the other food products have not been too clear. Traffic in eggs and dairy products, cattle and calves, and flour declined up to about 1952, and then revived to around the 1949 level. Revenues have followed the course of fluctuations in volume, and increased on balance quite markedly above the 1949 revenues, except

TABLE 3. REVENUES TO RAILWAYS FROM TRANSPORTING FOOD PRODUCTS
PRODUCED AND CONSUMED IN CANADA, AND INDEX NUMBERS
OF RAIL REVENUES PER TON OF FOOD, 1949 TO 1957.

Year	Rail Freight Revenue ^a (\$ thousand)	Revenue per Ton (1949 = 100)
1949	58,461	100.0
1950	58,008	107.1
1951	66,893	123.6
1952	76,379	132.4
1953	75,778	130.3
1954	71,356	151.0
1955	69,990	139.2
1956	79,075	151.9
1957	77,925	167.3

a Included estimates of revenues from carload and less-than-carload food shipments, milk shipments and food shipments by express.

for eggs and dairy products.

It is not the purpose of this study to account for causes of fluctuations in volume of traffic in these various commodities. A complex of factors surrounding conditions of production and consumption of each commodity, together with changes in real transportation costs for each, locally and nationally, has contributed. This brief examination of the trends for selected commodities has been developed at this point to illustrate that generalizations for the whole rail food traffic pattern cannot be applied to any given food commodity.

Some traffic has been retained by the railways only by avoiding effective implementation of general freight rate increases authorized by the Board of Transport Commissioners. In the case of grain, the rates are statutory and the Board of Transport Commissioners cannot raise them.¹ The Crowsnest Pass rates on grain, as a matter of policy, have been maintained at original levels to facilitate export of Canadian grain. Insofar as these apply on grain for domestic use as food, they help to narrow price spreads on grain products. This leaves out of account any effect that maintenance of these rates may have had on transportation rates for other commodities, including food products other than grain.

In the case of a number of products not included in the statutory rate category, the average revenue per ton-mile has been noticeably slow to increase. Very likely one reason is that the railways

¹ The statutory rates apply on grain in transit in western Canada destined for eastern Canadian domestic use. They do not apply to local traffic in the Prairie Provinces west of Fort William, nor on any westbound movement of grain for domestic consumption.

have granted various types of competitive rates which are lower than the non-competitive rates under which a larger share of the traffic moved back in 1949.

In a judgment in 1957 the Board of Transport Commissioners commented on the tendency towards increasing use of competitive rates on all types of products, and it seems likely that the comments are also applicable to food:

"It will be noted...that the proportion of the revenue from 'class' rates has declined materially since 1949 and is now only approximately one-half of the 1949 proportion. Class rates are the highest rates charged by the railways and it is apparent that a large part of the class-rated traffic has either been diverted to highway transportation or, if still hauled by the railways, is now carried at lower commodity rates, competitive rates, or agreed charges.

The fact that the competitive portion of the traffic has increased from 8.9 per cent to 21 per cent, and the agreed charges (largely based on competition) have increased from 2.4 per cent to 10 per cent, is substantial confirmation of the situation with regard to the class and non-competitive commodity rates."¹

Table 4 presents changes since 1949 in the average revenue per ton-mile collected by the railways from handling various food products. The data are taken from a 1% sample of carload traffic taken annually by the Board of Transport Commissioners, and so minor variations from year to year are to be expected as a result of errors of sampling. Nevertheless, the trend over the period can be regarded as accurate. As might be expected from the unchanging statutory rates applying on western grain, the revenue per ton-mile from hauling wheat is about the same in 1957 as it was in 1950. The statutory rates do not apply to grains in processed form for human consumption, and so revenue per ton-mile from cereal food preparations increased distinctly over the period. The average revenue from butter, cheese, and eggs at the end of the period was actually lower than in 1949/50, and the average revenues from edible packinghouse products and fish appear to be a little lower than they were in the early 1950's. Sugar beets are a commodity hauled on the average about 50 miles and are, therefore, subject to truck competition. So it is not surprising that the average revenue has not increased in the last few years. In the case of potatoes, average revenue per ton-mile has been kept down by excepting potatoes from certain rate increases, and also by agreed charge rates negotiated between the railways and potato producers of the Maritime Provinces since 1953.

¹ Board of Transport Commissioners for Canada, Final Judgment and Order, December 27, 1957, p. 28.

TABLE 4. CHANGES IN RAILWAYS' AVERAGE REVENUE PER TON-MILE
FROM CERTAIN FOOD PRODUCTS, 1949 TO 1957

(Average Revenue per Ton-Mile in Cents)

Year	Cereal			Edible			Butter		Canned
	Wheat	Preparations	Apples	Potatoes	Sugar	Packaginghouse	Fish	Cheese & Eggs	
					Beets	Products			Food
1949	0.50	1.40	2.00	1.20	3.60	2.80	2.20	3.00	1.70
1950	0.57	1.64	1.98	1.29	2.85	3.17	2.07	3.43	1.80
1951	0.65	2.13	2.10	1.42	2.64	3.75	2.07	3.97	1.93
1952	0.58	2.90	1.88	1.66	3.89	3.67	2.87	4.35	2.19
1953	0.57	2.82	2.52	1.92	3.13	3.45	2.88	4.19	2.72
1954	0.63	1.67	2.21	1.74	2.97	3.17	2.52	3.41	2.43
1955	0.56	1.66	2.44	1.75	3.00	2.87	2.72	2.91	2.44
1956	0.56	2.66	2.67	1.70	2.96	2.94	2.89	3.14	2.45
1957	0.55	2.33	2.75	1.70	2.90	3.36	2.69	2.88	2.51

Source: Board of Transport Commissioners, Annual Waybill Analysis of Carload Traffic.

In some cases, railways have continued to earn increasing average revenues per ton-mile, but the traffic has fallen off drastically. Fresh fruit, fresh vegetables, and cattle and calves are examples.

There has been a marked shift in the proportion of deliveries of every type of livestock by truck to stockyards and packing plants in the past 10 years. The proportion of cattle delivered by truck increased from 39.0% in 1948 to 72.5% in 1957, hogs from 55.4% to 76.4%, and calves and sheep to a similar extent. In each case there has been a corresponding decline in the proportion delivered by rail.

Competition of other forms of transportation, particularly trucking, has definitely restrained increases in railways' charges for hauling food. The full impact of general railway rate increases has not fallen upon food products. Average revenue per ton-mile and per ton from transport of food by rail has increased by a substantially smaller percentage since 1949 on account of the statutory rates on grain and the competitive rates and agreed charges which the railways have found it necessary to grant on a number of other products. The food industry has shifted some of its traffic to truckers, either because it is sometimes cheaper per se, or because it is more convenient and reduces the food firms' total costs.

By another yardstick, though, the transport bill for domestically produced and consumed food has not been kept within bounds. The total transportation bill for food products (estimated in Table 2) increased from \$109 million in 1949 to \$254 million in 1956, or 133%. The transportation bill for all products in the Dominion Bureau of Statistics national accounts increased from \$1,019 million in 1949 to \$1,929 million in 1956, or 89.3%. Gross national product increased by only 80.9%.¹ So it appears that the transport bill for food increased by more than the transport bill for all products, and more than gross national product.

The evidence seems somewhat contradictory, but seems to warrant the following conclusions:

(1) Generally inflationary forces affecting the carriers' costs led to substantial increases in freight charges between 1949 and 1957. The increases in rates applied to food products in general, but not to western grain, and only partially to potatoes.

(2) Competition between truckers and railways prevented the railways from putting the authorized rate increases fully into effect in the case of certain foods, such as eggs, cheese and butter, sugar beets, and potatoes. There has also been a definite shift in certain traffic from rail to truck transport, as in the case of fresh fruits and vegetables. The railways have been far from maintaining their 1949 position in the traffic in domestic food products.

1 The transport bill for all products (non-foods as well as foods) was 6.8% of gross domestic product in 1949 and 7.2% in 1956, and has varied in the past 10 years between 6.7% (in 1954) and 7.7% (1947).

(3) Because trucks have innate advantages over railways in handling less bulky types of food, especially for short hauls, the shift to trucking represents at least partly a shift to more convenient and efficient transport of food, rather than a reduction in freight charges per ton-mile.

(4) The bill for urban distribution costs by truck grew substantially between 1949 and 1957. As in the case of other estimates of trucking revenues, it is difficult in approaching urban distribution to base firm conclusions on calculations with many built-in assumptions. Evidence of changes in the truck transport bill for food should be treated as something more than circumstantial evidence, but also something short of proof.

Costs of Trucking Food

Compared with treatment of other media in the statistics and literature of transportation, little attention has been paid, up to the present, to trucking. Prior to 1956, there was no information published in government statistics on products transported by truck in Canada, and even now food products can be distinguished only by the headings "Agricultural products" and "Animal products". No data were published for trucking of these products in the Atlantic Provinces prior to the year 1957. Yet trucking is an industry serving all but a few isolated areas or settlements in Canada.

Of the total estimated costs of trucking food produced and consumed in Canada (\$159 million for 1957), over 40% (as measured by revenue) was carried in trucks of Ontario registration, and from 25% to 30% in those registered in Quebec. Thus at least two-thirds of the aggregate food trucking costs are attributable to the intensive use of this form of transportation in the concentrated population areas of central Canada. The significance of this also appears when the trucking cost estimates are segregated for interprovincial and intra-provincial traffic in food products. Of the total cost, only about 7% in 1957 represented interprovincial movement - the remainder consisting of costs of movement between points within a province and mainly for costs of movement within urban areas. These estimates include both the costs of "for hire" vehicles, that is to say, vehicles of firms engaged primarily in the trucking business, as well as the costs of trucks owned by individuals and firms engaged in food processing and distribution.

The estimate for total urban food trucking costs in 1957 (both "for hire" and privately owned vehicles) amounted to two-thirds of total trucking costs. In fact, urban transport of food by truck, (estimated at over \$100 million) in 1957, exceeded the total food transport bill for haul by rail.

In urban distribution the trucking industry does not, of course, compete with the railways, but competition in intercity handling of food has been keen in the last 10 years. In 1938 the Transport Act legalized the practice of agreed charges in order to help the railways meet truck competition. Under this legislation the railways are permitted to negotiate special low rates with shippers, who are then obligated

to ship at least a certain portion of their freight by rail. The effect of this legislation was not too noticeable during the war years when every carrier was handling capacity traffic, and when there were restrictions upon the growth of the trucking industry. Since the war, use of agreed charge rates has enabled the railways to retain some traffic, which might otherwise have been lost to the trucks.

It is difficult to generalize concerning differences between rail and truck rates. Where there is effective competition between carriers, there is a tendency towards equality in rates as between carriers affording approximately the same service. Otherwise, traffic would almost invariably flow to the cheaper carrier.

However, it is quite possible for one carrier to attract traffic from another even in spite of higher rates, if a superior service is offered. Trucks and railways afford different types of services, each with its own advantages to the shipper. Highway carriers offer a shorter transit time and more flexibility. A truck can start its journey as soon as it is loaded. Truck pickup and delivery services are especially attractive when a customer has no siding. The driver helps to load and unload the truck, which reduces costs of this operation to the shipper or consignee. And less handling by truck reduces damage and claims. Also, firms can own their own trucking fleet as a means of combatting rising freight rates and meeting their own particular delivery requirements. With his own trucks, a shipper can select equipment specifically suited to the transport of his goods.¹ For these reasons, trucks can meet the competition of the railways, even though trucking costs per ton-mile may actually be higher. This is on the average the case for food products transported in Canada. The average revenue per ton-mile from rail handling of food in 1956 was 1.53¢, and in 1957, 1.62¢. In comparison, the average revenue per ton-mile of "for hire" trucks in the years 1956 and 1957 is estimated to have been between 6.5¢ and 7.0¢.

On the other hand, the railways are the traditional bulk carriers on land, and they can handle large quantities at very low cost. In the movement of commodities, such as grain, the advantage of the railways is considerable. Also, the railways are better equipped to handle long-distance shipments. Trucking firms do not maintain the same national organization and facilities as railways, and trucks are more costly to operate and less easily controlled the farther they are from their home base. Each medium of transportation has its own special preserves, based on the types of service which it is intrinsically best suited to perform. At the same time, there is a very substantial middle ground in which competition can be intense.

A study of the transportation preferences of the Texas food industry defines the area of competition between rail and truck in this way:

1 Dun's Review of Modern Industry, June, 1958, "A Shipper's-Eye View of America's Transportation System", p. 66.

"To sum up rail operations in relation to distance, it could be said that rail transportation was utilized very sparingly for shipments of less than 100 miles. The use of rail for movements of 100-250 miles was confined largely to carload shipments. At distances over 250 miles, however, rail became increasingly competitive with truck and the relative use for all types of rail shipments increased sharply."¹

By and large, the same conclusion can be applied to Canada. In the transportation of food, competition between carriers will only extend to a portion of the total tonnage hauled. The area of competition is circumscribed by the natural advantages of each type of carrier. The shift towards trucking in the past 10 years denotes successful competition by the trucking industry with the railways, but once trucks have captured the traffic for which they are the most efficient carrier, the growth of the industry will cease to be at the expense of other types of carrier and will be at a rate proportionate to the growth of the nation's food business as a whole. For this reason, the growth trend of trucking in the next 10 years may not resemble that of the past 10 years.

Water Transport

Although the grain trade bulks large in Canadian coastal shipping, water transport is of secondary importance in the handling of food for domestic consumption. Water-haulage of Canadian products for domestic consumption as food accounted for only 1.3% of the total food transport costs (Table 2). Water freight is definitely the cheapest form of transportation. Throughout the past decade, it cost roughly a third of a cent to transport a ton of grain one mile in coastal shipping. More than half of the total revenue for water shipment of domestic food throughout the period came from wheat.

It is particularly necessary to stress here again that these estimates are, at best, broad approximations. They include estimates of costs of moving grain for domestic food use and of canned foods moving in coastwise trade on the Great Lakes and the St. Lawrence River. Lack of data made it impossible to estimate costs of moving food in coastwise trade on the east and west coasts of Canada and in the Gulf of St. Lawrence.

Apart from grain, coastal shipping has small significance in the transport of food. To a Newfoundland fisherman in one of the out-ports, coastal shipping may be the indispensable means of marketing his product and obtaining his own food supply. The importance of this means of transport in particular districts is not to be denied. Nevertheless, in total, water transport of foods, other than grain, is of limited importance, and the government statistics do not tell much about it. It

1 Texas Transportation Institute, Bulletin No. 8, "Transportation Uses and Preferences of the Texas Food Industry", by Charley V. Wootan, p. 45.

has, therefore, not been possible to estimate the revenue to the shipping companies from transporting these products.

Instances of coastal shipping companies losing traffic to other carriers are probably few. There has been no change similar to the sizeable shift of traffic from railways to truckers which occurred during the past 10 years. Water transport is cheap. It has a distinctive place in the handling of bulk goods. Yet this means of transport is slow and cannot serve inland points unless the freight is transhipped to another carrier.

Air Cargo

There is an astonishing difference between the amount of revenue an airline and a coastal shipping company collect for transporting a ton of food. In 1956 the average revenue per ton of grain handled by water was \$2.72, while the average revenue of the airlines from air cargo (all commodities) was \$328.28. This contrast in revenue per ton reflects the vast difference in the roles of these two carriers. Water carrier is the cheapest (and slowest) means of bulk transport. Air cargo is the fastest and most expensive type of transport and as a result performs an emergency or specialty service in populated areas, or sometimes the sole winter service to remote areas.

Although costs of air transport for domestic food supplies still only account for a very small part of total food transport costs, estimates of revenue to the airlines from handling food in air cargo more than quadrupled between 1949 and 1957, increasing from \$1 million to \$5 million (Table 2). Most of the increase in revenue from air cargo resulted from growing volume of traffic, which quadrupled within seven years.

Nevertheless, air cargo, although still a small factor in the total food transportation cost, is growing rapidly. It has not proved particularly successful in heavily populated areas as other means of transport have speeded up their services sufficiently to prevent effective competition from the airlines. Air traffic has proved most successful in developing and supplying remote areas in the Canadian northland. Yellowknife, Northwest Territories, for example, is wholly dependent upon airlines during nine months of the year for its perishable food. Also, fish is regularly shipped from northern Manitoba and parts of northwestern Ontario by air to points farther south. Air freight and air express have, therefore, considerable importance in certain regions which can afford the high-cost service. No doubt, as a result of air freight charges, the retail price of food is distinctly higher than in areas which can import their food by a less expensive means of transport. Since the average revenue per ton of air cargo has increased less than the average revenue per ton of food trucked or carried by rail, the contribution of air transport costs to increases in price spreads of food products in remote northern points has likely been less than in areas served mainly by other carriers. Nevertheless, any attempt to shift population or development more into remote areas will tend to increase both average transport costs and average food costs to consumers in Canada.

In more southerly areas, the role of air cargo in transport of food in the future may be noteworthy, especially if the speed of aircraft increases very rapidly. A recent article on the advantages and future prospects of the various means of transport in North America stated:

"According to Senior Vice President Hugh J. Davern of the Grand Union Company, one of the top ten food chains, jet planes will halve the travel time of fresh produce from farm to supermarket. This may revolutionize the marketing of these products, for farmers will probably make fresh vegetables and fruits 'table-ready' or ready-to-cook before shipment, to compete with frozen foods."¹

Developments in the transportation industry in the past decade indicate change and improved efficiency. Airways have extended their air freight services and greatly expanded their volume of business with only modest increases in charges per ton handled. Competition between truckers and railways has resulted in the diversion to the trucks of considerable traffic which they are better suited to handle. The necessity of resorting increasingly to competitive rates has tended to hold the railways' charges lower than they otherwise would be on certain types of traffic, though the benefit is at least partly offset by a shifting of the burden of costs onto other types of rail traffic. Especially if inflationary pressures on carriers' costs (and indirectly on freight rates) recur in the future, the contribution of transport charges to price spreads of food products will be held in line only if the industry continues to improve its efficiency.

3. Urbanization and Transport Costs

The transportation of food by trucks in urban areas in 1957 involved an aggregate cost of over \$106 million. Canada's urban population is increasing both absolutely and relatively. In the 1951 census 62.9% of Canada's population was classed as urban, and in 1956, 66.6%. The phenomenal growth which occurred in the population of some metropolitan areas between those two census years is illustrated by the data in Table 5. The population of Edmonton increased by just over 30% and the increase for Calgary was more than 28%. The next 10 cities, in order of rapidity of increase, were all located in Ontario. In 1957 well over half the total cost of urban trucking of food for Canada was incurred in Ontario. Distribution of food by truck in metropolitan areas in Ontario particularly is a large and rapidly growing business.

The fact that so much money is spent for handling food in urban centres, coupled with the rapidity of the growth of some of these areas, makes it worthwhile to ask whether urban distribution of food is as efficient as it could be. The lack of detailed and comprehensive

¹ Dun's Review of Modern Industry, June, 1958, "Better Transportation is Up to Management", p. 103.

TABLE 5. POPULATION OF RAPIDLY-GROWING METROPOLITAN AREAS, 1951 AND 1956

Rank	Metropolitan Area	Province	Population (thousands)		Percentage Increase (%)
			1951	1956	
1	Edmonton	Alberta	249	174	30.2
2	Calgary	Alberta	196	141	28.3
3	Sudbury	Ontario	94	71	24.4
4	Sarnia	Ontario	52	41	21.3
5	St. Catharines	Ontario	84	68	20.1
6	Oshawa	Ontario	64	52	19.9
7	Sault Ste. Marie	Ontario	50	40	19.7
8	Kitchener	Ontario	79	64	19.2
9	Niagara Falls	Ontario	51	42	17.2
10	Toronto	Ontario	1,348	1,117	17.1
11	Guelph	Ontario	37	30	17.1
12	Hamilton	Ontario	326	272	16.4
13	Halifax	Nova Scotia	160	134	16.1
14	London	Ontario	153	129	16.0
15	Chicoutimi - Jonquiere	Quebec	92	78	15.4
16	Fort William - Port Arthur	Ontario	84	71	14.8
17	Vancouver	British Columbia	659	562	14.7
18	Kingston	Ontario	58	49	14.4
19	Winnipeg	Manitoba	410	354	13.6
20	Shawinigan Falls	Quebec	58	51	13.2
21	St. John's	Newfoundland	78	67	13.2
22	Ottawa - Hull	Ontario - Quebec	336	292	12.8
23	Montreal	Quebec	1,595	1,395	12.5

statistics renders an investigation difficult, and so it may be possible merely to point to the great significance of this industry, the urban freight transport industry. Thousands of firms are involved in it, from those specializing in trucking to those primarily in assembly, processing and distribution, but operating one or more trucks. The interest in its efficiency, therefore, is of concern to the community.

There are two ways in which urbanization can inflate transport costs. First, a growth in concentration of urban population may bring about an increase in the distance from which food products must be brought to serve the growing city. Second, the cost of distribution of food by truck within a city may rise as population becomes greater.

In the case of eggs, milk, butter, and meat the producing areas around the city may shrink as the city grows, and the increasing demand for these products will, at the same time, push the margin of profitable production farther out. As this happens, the average haul to market increases, and so does the cost of transport, whether by truck or rail. The general statistics of average haul on the railways do not yield separately the average haul to urban centres. In the absence of parallel data for trucking it is, therefore, impossible to distinguish changes in length of haul arising out of loss of traffic to trucks from changes resulting from increasing demands of metropolitan centres.

Similarly, statistics of the net movement of various food products by rail from one province to another cannot be specifically related to urbanization. The net import of increasing quantities of food into a province does indicate a change in the position of a province as an agricultural producer though, registering a shift to outside sources of supply. Usually, dependence upon outside sources indicates a higher cost of transportation.

Changes in the surplus or deficit position of the various provinces, as reflected by the rail movement of agricultural and animal products, may be gauged from the data in Table 6. The marked increase in imports of agricultural and animal products into Ontario applies to a broad range of commodities and may, therefore, be directly related to the increase in population of urban centres. In Quebec net imports of dressed meats and dressed poultry have increased substantially between 1949 and 1957, and the same is true of potatoes, flour, and "other fruits" (excluding apples). Changes in net imports of grains may very well reflect changes in volume moving into foreign, rather than domestic, channels. Likewise, in the case of British Columbia, the substantial increase in net rail imports of agricultural products is largely accounted for by a sharp rise in the net imports of wheat, almost certainly reflecting larger shipments from the Prairies subsequently exported to foreign countries by water. Increasing net imports of cattle, hogs, dressed meats, and flour are more likely indicative of increased urban demand. The evidence is far from conclusive, but does not contradict the possibility of food products being brought greater distances by rail to urban markets.

In the case of manufactured food products, the necessity of

TABLE 6. NET RAIL MOVEMENT OF AGRICULTURAL PRODUCTS AND ANIMAL PRODUCTS, BY PROVINCES, 1949 AND 1957

Province	Year	Agricultural Products ^a		Animal Products	
		Net Out of Province	Net Into Province	Net Out of Province	Net Into Province
(thousand tons)					
Newfoundland	1949	not available			
	1957		53		14
P.E.I.	1949	193		10	
	1957	195		11	
Nova Scotia	1949		214		23
	1957		711		13
New Brunswick	1949	107			14
	1957		636		24
Quebec	1949		1,667		133
	1957		2,214		202
Ontario	1949		4,824		21
	1957		6,460		126
Manitoba	1949	2,575		23	
	1957	1,306			2
Saskatchewan	1949	6,502		184	
	1957	8,580		195	
Alberta	1949	3,798		246	
	1957	4,367		284	
B.C.	1949		357		52
	1957		5,148		73

a Field crops, fruit, vegetable, tobacco etc. products.

Source: Based on statistics in D.B.S., Summary of Monthly Railway Traffic Reports, Year Ended December 31, 1949, and Railway Freight Traffic, 1957.

drawing on a wider area for supplies for growing cities is not so direct. New manufacturing plants of near-optimum size can be located close to growing urban centres, which previously constituted too small a market to absorb the output of a factory. In such a case, the building of the new plant may cut the average rail haul for a particular manufactured product quite substantially, although it also might result in increased shipping distances for the raw food materials. This paper, in which no intensive commodity analysis has been attempted, does not attempt to offer statistical evidence on increases in length of food haulage to growing cities.

The second way in which urbanization can increase food transport costs is by making distribution of food within the city more difficult and expensive. Traffic congestion in urban areas increases costs of operating delivery vehicles in downtown streets at certain times of day. In some of the larger cities, like Montreal, congestion may involve delay and poor use of truck-time throughout the day. To some extent, food processors can schedule deliveries in such a way as to minimize the time trucks spend in traffic jams. Deliveries to chain store outlets may be scheduled to avoid rush hours. Many dairies begin deliveries before dawn in order to supply consumers and restaurants and stores with fresh milk and dairy products before their day begins, and so do not bear the brunt of congestion.

Dairies may be more affected by growth of suburban areas where the distance between houses is greater, apartment buildings fewer than in the city centre, and where, consequently, each truck takes longer to make the same number of deliveries.

Another characteristic of urban distribution of food is overlapping of routes, or delivery to homes directly, rather than to retail stores. Interested in reducing the cost of distributing milk, the Ontario Royal Commission on Milk in 1947 expressed the hope that experiments in economy would be tried, such as quantity discount sales, depot sales, every-other-day delivery, and zoning of routes. In his report, Hon. D.C. Wells also said:

"In fairness to the distributor I think it must be said that it is not possible to reduce the cost of distribution further without much more active co-operation on the part of the consuming public. There is, I think, no substantial evidence before me which would indicate that the cost of processing and administration are unreasonable or can be greatly reduced ... The key at the present time to any immediate further economies must lie in some fundamental re-organization of the distributing process. Without such re-organization possible savings would be comparatively minor in nature and amount."¹

The same statement is true today. Some of the economies have been tried, but there is still scope for reorganizing the distribution

¹ Report of the Ontario Royal Commission on Milk, 1947, p. 93.

process. It is to be observed here, of course, that there has been a shift from delivery service to cash and carry for milk and bread. In some urban centres there has been a consolidation of delivery services, although decreases in sales may have offset transport savings effected by consolidation and elimination of routes. In any event, the change to cash and carry does not yield a full saving in transportation costs - it simply effects a transfer, in whole or in part, of these costs outside the marketing system to the customer.

In view of the growth in Canada's urban population and the large amount spent on distribution of food in cities, a survey of the problems involved in achieving efficient distribution could be most useful. The problem has been approached piecemeal by those interested in traffic congestion, or in a particular firm's delivery problems, or in the distribution of one commodity, such as milk. An overall approach to the problem would tend to emphasize the far-reaching nature of the potential economies, and might attract far more public attention than a bit-by-bit study. Urban distribution of food is one of the functions whose cost is included in the price spread, and in the next 10 years the reduction of distribution cost in large cities could help to prevent a widening of the spread.

4. Gaps in the Statistics

In the process of developing estimates of aggregate food transportation costs, opportunity has been afforded to examine in detail the existing statistical series on Canadian transportation. This examination has thrown light on deficiencies in the statistics, making it possible to suggest where improvements could be made. While the suggestions arise out of the attempts to use the statistics for a particular purpose, in many instances the data would be useful for other purposes. Thus, even if estimates of aggregate costs of transportation for products, industries, or other classes or categories in the Canadian economy are not compiled in the future, or if the series developed here is not to be extended or improved upon, the suggestions which follow may be helpful as a contribution to general improvement of transportation statistics.

(1) The major statistical difficulty faced in estimating the aggregate costs of hauling food by truck over the period of study was the lack of information in the required detail for the years prior to 1957. Up to that year, the commodity breakdown was quite inadequate. For certain types of trucking (e.g., urban) no information on commodities hauled is available. The 1957 Dominion Bureau of Statistics report, "Motor Transport Traffic Statistics", has met several of the gaps, but further refinement and breakdown of statistics is desirable for the purpose of estimating total food transport costs.

(2) Among the abundant Canadian rail statistics, there are only limited data of limited reliability on average haul per ton, and revenue per ton-mile, for particular commodities. At present, the information is available only in the Annual Waybill Analysis of Carload

Traffic prepared by the Board of Transport Commissioners, based on a 1% sample of all carload traffic.

(3) There is no data published on the commodities handled by airlines. One of the difficulties is the fact that airlines do not record kinds and quantities of freight carried in "bulk transportation" or charter service. If airlines maintained such records, useful statistics could be obtained.

The availability of traffic statistics from all carriers, by commodities, based on the Canadian Freight Commodity Statistics Classification issued by the Railway Association of Canada, would greatly facilitate appraisals of shifts of traffic from one type of carrier to another.

(4) Further, the incomplete shipping statistics might be improved so as to give reliable information about revenues and length of haul, by commodities. At the present time, even the tonnage figures fall short in adequacy and reliability. The loadings of a commodity in coastwise traffic frequently are entirely different from unloadings of the same commodity.

(5) More details of the characteristics of individual urban centres, particularly those of substantial size, would prove useful. It is impossible now to judge the volume of goods produced, entering and leaving major cities, or the costs of distributing goods within the cities.

5. Conclusions

1. The total bill for transporting food produced and consumed in Canada increased from \$109 million in 1949, to \$245 million in 1957.

2. Of the total amount, revenues collected by truckers accounted for \$48 million in 1949, and \$159 million in 1957. The trucking industry, therefore, collected a large and increasing share of the total food transport bill (excluding exports and imports).

3. The volume of food handled by truckers (as measured by ton-miles) increased nearly 80%, partly as a result of a substantial shift in traffic from the railways. The ton-miles of domestic food handled by rail in 1957 were slightly less than in 1949.

4. Between 1949 and 1957, railway freight rates in general increased by 79%. These increases were largely the indirect results of general inflationary pressures which boosted the railways' costs. Substantial competition from other carriers, particularly trucks, however, prevented the railways from raising their effective rates to the full extent authorized by the Board of Transport Commissioners. Average revenue per ton-mile of food freight handled by rail increased by only 43.1%. The average revenue per ton-mile from certain products,

including butter, cheese, eggs, sugar beets, edible packinghouse products, and fish, therefore, either did not rise during this period, or else rose less than the average revenue per ton-mile from the hauling of food products in general. Even so, between 1949 and 1957 average revenue per ton-mile increased by a larger percentage than the consumer retail price index for food.

5. Water transport of food in coastwise trade consists mainly of grain, principally wheat. Revenues from transport of grain for consumption as food in Canada bulged upwards in 1952/53, but were about the same in 1957 as in 1949. Average revenue per ton-mile increased only about 10% over the period.

6. Like water freight rates on food, air cargo rates increased less than rail or truck rates between 1949 and 1957. Traffic more than quadrupled. Larger revenues from transport of domestically produced and consumed food were earned by the airlines in 1957 (\$5 million) than by coastal shipping companies. Air freight and air express services have proved most successful in supplying remote areas in the Canadian northland.

7. One potential field for cost reduction is distribution of food products in urban areas. The bill for urban trucking of food was substantial in 1957, both in total amount (over \$100 million) and as a proportion of the total transport cost. Any steps taken to lower costs in urban food trucking would have an impact on overall marketing costs.

APPENDIX A

Sources of Data

1. Rail

The chief sources of data used in the estimates of railway revenues from handling domestically produced and consumed food are: Dominion Bureau of Statistics, Railway Freight Traffic (annual publication); and Shipping Report (an annual publication, used as the source of water exports and imports data, which are required for an adjustment to arrive at domestic rail shipments of food); and Board of Transport Commissioners for Canada, Annual Waybill Analysis of Carload Traffic.

2. Trucking

The cost of transporting food products by truck is based on revenue collected by trucking firms from shippers, as reported in the D.B.S. publication, Motor Transport Traffic Statistics. Only one or two years' data are available for each province, and there is no period of 12 months for which statistics for all provinces are published until the issue of the statistics for the year 1957.

Prior to the publication of Motor Transport Traffic Statistics, Dominion Bureau of Statistics published Motor Carriers, Freight-Passenger, but this latter publication contains no data relating to agricultural products or animal products, and it is, therefore, impossible to use the publication in preparing total revenues from trucking food. The data in the publication are useful, however, to show something about the growth in truck traffic and changes in average revenue per ton-mile from 1949 to 1956. Because of the difficulty of collecting reliable data from so many truckers, many of them in and out of the business, the Dominion Bureau of Statistics stresses the limitations in even its latest series of publications, Motor Transport Traffic Statistics.

3. Water

D.B.S., Grain Trade of Canada Reports, Reports of the Board of Grain Commissioners, and correspondence with coastal shipping firms and agencies.

4. Air Cargo

Data were obtained from various scheduled and non-scheduled carriers and from Trans-Canada Airlines.

FOOD ADVERTISING EXPENDITURES, 1949-1957

This study is limited to advertising expenditures by food retailers, merchant wholesalers, and manufacturers, as defined by the Dominion Bureau of Statistics. It has not been possible to include estimates of advertising costs of certain other marketing institutions. The more noteworthy omissions are parent or head office advertising performed for wholesaling and manufacturing subsidiaries, and advertising expenditures by agents, brokers, voluntary chain headquarter offices, food trade associations, marketing boards and, to some extent, co-operative wholesale assemblers. The carbonated beverages industry is included but segregated; the beer and liquor industries are excluded.

It is difficult to obtain a precise definition of advertising expenditures. Advertising has been defined by one authority as "any paid form of non-personal presentation of goods, services, or ideas to a group by an identified sponsor".¹ In making use of D.B.S. data on advertising expenditures we are confronted with the fact that sales promotion expenses are often included in the advertising account. If one were to follow the definition of Beckman et al, they would not be. They state: "Sales promotion includes those selling activities that supplement both advertising and personal selling, coordinate them, and render them more effective. It includes sampling, displays, demonstrations, and various kinds of non-recurrent selling effort."² In estimates of advertising expenditures of manufacturers, one also encounters the fact that advertising allowances to wholesale and retail customers are included. It is difficult to ascertain to what extent these take the place of price discounts in contrast to being straightforward expenditures on advertising.

Estimates of Advertising Expenditures, 1949 to 1957

Advertising expenditures of the sectors of the food economy were calculated and added together to determine total food advertising expenditures in Canada, from 1949 through 1957. This section describes the procedures that were employed to calculate the advertising expenditures of each of the sectors.

A. The Retail Sector - Independent Food Stores

The Dominion Bureau of Statistics publishes biennially the operating results of a sample of independent retailers. The ratios of advertising to net sales, by sales volume size class, were obtained over time for grocery stores, combination food stores, meat stores, fruit and vegetable stores and confectionery stores. Weighted ratios were computed by multiplying the number of stores in each sample by the average sales volume in the given sales volume class, and then by multiplying this result

1 T.N. Beckman, H.H. Maynard, and W.R. Davidson, Principles of Marketing, The Ronald Press, New York: 1957, p. 408.

2 Ibid.

by the advertising-to-sales ratio in the given sales volume class. The advertising ratios for the remaining kinds of independent retailers (bakery, candy-nut, dairy products and fish markets) were derived by using yearly aggregate advertising ratios of confectionery, meat, and fruit and vegetable stores, on the assumption that such ratios would be representative of these smaller-sized stores.

The 1949-1957 sales volumes of independent food retailers, by kind of business, were estimated by using yearly D.B.S. sales volume statistics of independent food retailers (classed into grocery and combination stores and other food stores) and the 1951 Census of Merchandising (Volume VII, Table 13). Using the yearly sales volume data of D.B.S. to determine rates of change from 1949 through 1957, and using the 1951 Census data to determine the per cent of sales volume by kind of business, the sales volumes for each Census kind of independent food retailer were extrapolated for the years 1949 through 1957. These sales estimates are provided in Appendix Table A.

Table 1 provides the estimated advertising expenditures of independent food stores. These were estimated by applying the advertising-to-sales ratios to the sales volume estimates.

B. The Retail Sector - Corporate Chain Food Stores

Essentially the same method was employed in calculating advertising expenditures by corporate chain food stores as was employed in calculating the advertising expenditures by independent food stores.

Yearly weighted advertising ratios were estimated for chain combination stores, grocery stores, and meat stores from the biennial operating results sample surveys conducted by the Dominion Bureau of Statistics.

The yearly sales volumes of each Census kind of corporate chain food retailer were extrapolated by using the yearly D.B.S. sales volume data of the given groups of corporate chain retailers (grocery and combination stores, and other food stores) to determine rates of change from 1949 through 1957, and by using the 1951 Census of Merchandising (Volume VII, Table 13) to estimate the per cent of sales volume by kind of business. These sales estimates are provided in Appendix Table B.

The advertising ratios for the given groups of chain food retailers (combination stores, grocery stores and meat stores) were then multiplied by the appropriate sales volume estimates, to yield estimates of advertising expenditures, over time, for the three kinds of chain stores.

Since none of the three available series of ratios seemed to represent the advertising ratios for the remaining six kinds of chain food stores, it was decided to estimate the remaining ratios as follows. First, the aggregate ratio of advertising to sales was calculated for the three given kinds of corporate chain stores. Second, a similar ratio was evolved for the same three kinds of stores in the independent retail food

TABLE 1. ADVERTISING EXPENDITURES OF INDEPENDENT RETAIL FOOD STORES, CANADA, 1949 TO 1957

Kind of Store	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Grocery Stores	907	1,064	1,239	1,284	1,422	1,543	1,791	2,018	2,290
Combination	1,290	1,501	1,676	1,661	2,147	2,715	3,309	4,002	4,629
Bakery	17	19	22	24	26	26	28	35	37
Candy, Nut	3	3	4	4	5	5	5	6	7
Confectionery	155	175	228	240	241	240	249	286	306
Dairy Products	7	8	9	10	11	11	12	15	16
Fish Markets	6	7	8	9	9	9	10	12	13
Other	146	141	179	196	196	196	225	263	286
Meat Markets	217	238	254	233	246	280	318	349	395
TOTAL	2,748	3,157	3,620	3,661	4,303	5,025	5,947	6,987	7,979
Advertising Costs as Per Cent of Net Sales	0.19	0.20	0.20	0.20	0.24	0.27	0.31	0.34	0.37

Source: Operating Results of Independent Food Stores, 1948, 1950, 1952, 1954, 1956, D.B.S., Ottawa and Appendix Table A.

sector. Finally, it was assumed that the overall relationship between the three kinds of chains and independent stores held for the remaining kinds of food stores; the advertising ratios for these remaining chain stores (bakery, candy-nut, confectionery, dairy, fish, and others) were derived by means of simple ratio calculations.

Table 2 provides the estimated advertising expenditures of chain food stores obtained as indicated above.

C. The Wholesale Sector - Food Merchant Wholesalers

Advertising expenditures by food merchant wholesalers were calculated by multiplying estimated advertising-to-sales ratios and estimated sales volumes, by kind of business establishment.

The Dominion Bureau of Statistics publishes biennially the operating results of a sample of food merchant wholesalers. The ratios of advertising to net sales were obtained, over time, for grocery wholesalers, fruit and vegetable wholesalers, and tobacco and confectionery wholesalers. The cost of catalogues were included in advertising expenditures. A 1954 study of advertising expenditures in Canada yielded an aggregate advertising ratio for meat, fish, poultry and dairy wholesalers.¹

The 1949-57 sales volumes of food merchant wholesalers, by kind of business, were estimated by using yearly D.B.S. sales volume statistics (index numbers for the years 1949-51) of fresh fruits and vegetables wholesalers, groceries and food specialties wholesalers and meat and dairy products wholesalers. Using the above sales volume data to determine yearly rates of change, and using the 1950 Census of Distribution (Volume VIII, Table 3) to obtain information on percentage distribution, the sales volumes for each kind of food merchant wholesaler were extrapolated for the years 1949 through 1957. These sales estimates are provided in Appendix Table C.

It was then necessary to determine the advertising expenditures for those kinds of food merchant wholesalers for which no ratios were available. First, a weighted aggregate advertising-to-sales ratio was determined from the above data for the fruit and vegetable, grocery, and tobacco and confectionery wholesalers, for each year, 1949 through 1957. Second, the 1954 advertising ratio for meat, fish, poultry and dairy wholesalers was extrapolated over time to hold the same relationship to the weighted aggregate ratios. Third, the yearly weighted aggregate ratios were assumed to be representative of the three remaining kinds of food merchant wholesalers, frozen and frosted food wholesalers, other products wholesalers, and produce wholesalers.

A multiplication of the estimated ratios of the above businesses with their estimated sales volumes yielded the advertising expenditures data found in Table 3.

1 Advertising Expenditures in Canada, 1954, Reference Paper No. 67, Dominion Bureau of Statistics, Ottawa, 1956, p. 14.

TABLE 2. ADVERTISING EXPENDITURES OF CORPORATE CHAIN RETAIL FOOD STORES, CANADA, 1949 TO 1957

Kind of Store	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Grocery Stores	63	134	237	309	382	472	651	625	571
Combination	1,968	2,289	2,774	3,892	5,073	6,462	8,096	9,218	10,353
Bakery	12	13	16	23	24	24	25	34	35
Candy, Nut	13	15	18	25	27	26	28	37	38
Confectionery	4	5	6	9	9	9	10	13	13
Dairy Products	1	1	2	2	3	3	3	4	4
Fish Markets	a	a	a	a	a	a	1	1	1
Meat Markets	30	28	29	37	41	52	68	74	84
Other	4	4	5	7	8	8	8	11	11
TOTAL - Chain	2,095	2,491	3,089	4,305	5,567	7,058	8,890	10,017	11,109
Advertising Costs as Per Cent of Sales	0.46	0.47	0.49	0.59	0.69	0.80	0.90	0.89	0.88
TOTAL RETAIL ADVERTISING (Chain and Independent)	4,843	5,649	6,709	7,966	9,869	12,082	14,837	17,004	19,088
a Less than \$1,000.									

Sources: Operating Results of Chain Food Stores, 1949, 1951, 1953, 1955, 1957, D.B.S., Ottawa and Appendix Table B.

TABLE 3. ADVERTISING EXPENDITURES OF MERCHANT WHOLESALERS OF FOOD PRODUCTS, 1949 TO 1957

Kind of Wholesaler	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Fresh Fruit and Vegetables.....	117	122	110	191	222	190	174	210	232
Groceries and Food Specialties.....	522	560	530	818	1,039	933	912	1,121	1,491
Meat Products.....	133	142	139	192	252	202	171	200	253
Dairy and Poultry Products.....	148	158	155	214	281	225	190	229	281
Confectionery, Soft Drinks and Tobacco...	102	108	142	148	177	163	146	127	135
Fish and Sea Foods...	31	33	32	50	63	55	52	64	84
Frozen and Frosted Foods.....	1	1	1	1	2	2	1	2	2
Other Food Products except Groceries....	13	14	13	21	26	23	22	27	35
Produce.....	10	10	10	15	19	17	16	20	26
Advertising Costs as Per Cent of Sales	1,078	1,148	1,133	1,650	2,081	1,809	1,684	1,997	2,538
	.08	.08	.07	.10	.13	.10	.09	.10	.12

Sources: Operating Results of Food Wholesalers, 1949, 1951, 1953, 1955, 1957, D.B.S., Ottawa.
 Advertising Expenditures in Canada, 1954, Reference Paper No. 67, D.B.S., Ottawa, 1956.
 Appendix, Table C.

D. The Manufacturing Sector - Food Manufacturers

Advertising expenditures by food manufacturers were calculated by multiplying estimated advertising-to-sales ratios with estimated sales volumes, by kind of business.

The Dominion Bureau of Statistics provides no yearly estimates of advertising ratios of food manufacturers, but does provide yearly gross selling values of shipments, f.o.b. plant, in the food manufacturing sector. The selling values of shipments were assumed to be equivalent to the sales volume of food manufacturers and are tabulated in Appendix Table D.

The problem was to obtain estimates of advertising ratios. The only known instance that the Dominion Bureau of Statistics has attempted to accumulate advertising ratios in the manufacturing sector was for the year 1954.¹ The accumulated ratios covered all Census classes of food manufacturers except the fish processing and packing, processed cheese, animal oils, sausage and sausage casings, and carbonated beverages industries. The 1954 ratios for these industries were estimated, using as a guide, the industries for which ratios were available.

Since the ratio values were known or estimated for the year 1954 only, the task was then to extrapolate advertising ratios for the other years under consideration. The assumption was made that the advertising expenditures of food manufacturers had the same relative yearly movements as the combined retailer and wholesaler advertising costs. Using 1954 as the base year, an index of yearly movements of food manufacturers' advertising costs was determined. The 1954 advertising ratios were multiplied by the index values to yield estimated advertising ratios, by kinds of food manufacturers, for the years 1949 through 1957. The resultant ratios were then multiplied by the sales volume of food manufacturers, by industry origin, to give the estimates of advertising expenditures found in Tables 4 and 5.

1 Advertising Expenditures in Canada, 1954, Reference Paper No. 67, Dominion Bureau of Statistics, Ottawa, 1956.

TABLE 4. ADVERTISING EXPENDITURES OF MANUFACTURERS OF FOOD PRODUCTS, BY PRODUCT GROUPS, 1954

Product Group	1954 Expenditures	
	(<u>\$ thousand</u>)	
Biscuits	1,380	
Bread and Other Bakery Products	<u>3,587</u>	
Total Bakery Products		4,966
Fish Processing and Packaging	2,486	
Fruit and Vegetable Preparations	<u>6,472</u>	
Total Canning and Processing		8,958
Butter and Cheese	3,092	
Concentrated Milk Products	517	
Processed Cheese	1,340	
Ice Cream	<u>84</u>	
Total Dairy Products		5,033
Animal Feed	1,874	
Flour Mills	2,649	
Prepared Breakfast Foods	<u>3,011</u>	
Total Grain Mill Products		7,534
Animal Oils and Fats	24	
Sausage and Sausage Casings	104	
Slaughtering and Meat Packing	<u>3,769</u>	
Total Meat Products		3,897
Confectionery	4,963	
Macaroni and Kindred Products	327	
Sugar Refining	82	
Miscellaneous Food Preparations	<u>13,483</u>	
Total, Other Food Products		18,856
Total, excluding Carbonated Beverages		49,245
Carbonated Beverages	2,369	
Total, including Carbonated Beverages		51,613

TABLE 5. TOTAL ADVERTISING EXPENDITURES OF MANUFACTURERS
OF FOOD PRODUCTS, 1949 TO 1957

Year	Advertising Expenditures (excluding Carbonated Beverages)	Advertising Costs as Per Cent of Sales
	(\$ thousand)	%
1949	16,105	.74
1950	19,794	.72
1951	25,970	.83
1952	32,377	1.00
1953	40,889	1.31
1954	49,245	1.54
1955	60,064	1.87
1956	74,522	2.18
1957	87,652	2.43

APPENDIX TABLE A

INDEPENDENT FOOD STORE SALES BY KIND OF STORE, CANADA, 1949 TO 1957

(Calendar Year)

Kind of Store	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Grocery	453,330	483,532	563,259	583,666	592,672	617,367	639,502	672,595	715,696
Combination	586,417	625,486	728,619	755,017	766,668	798,613	827,246	870,054	925,808
Bakery	13,084	13,883	16,046	16,045	16,088	16,045	15,788	17,289	17,623
Candy, Nut	2,355	2,499	2,888	2,888	2,896	2,888	2,842	3,112	3,172
Confectionery	103,105	109,398	126,441	126,438	126,775	126,432	124,407	136,237	138,871
Dairy Products	5,495	5,831	6,739	6,739	6,757	6,739	6,631	7,261	7,402
Fish Markets	4,710	4,998	5,776	5,776	5,792	5,776	5,684	6,224	6,344
Other	132,938	141,052	163,025	163,021	163,456	163,013	160,403	175,655	179,052
Meat Markets	155,178	158,839	169,616	155,160	144,912	147,214	144,607	145,619	151,870
Total	1,456,614	1,545,518	1,782,410	1,814,751	1,826,016	1,884,086	1,927,109	2,034,045	2,145,839

Sources: Retail Trade and The 1951 Census of Distribution, Volume VII, Table 13, D.B.S., Ottawa.

APPENDIX TABLE B
SALES VOLUME OF CHAIN FOOD STORES BY KIND OF BUSINESS, CANADA, 1949 TO 1957
(Calendar Year)

Kind of Store	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Grocery	33,034	38,427	46,567	53,360	58,765	65,620	73,175	83,321	93,575
Combination	401,621	467,194	566,163	648,745	714,455	797,802	889,657	1,013,009	1,137,677
Bakery	3,744	4,346	5,266	5,281	5,410	5,485	5,278	7,234	7,549
Candy, Nut	4,107	4,767	5,776	5,792	5,934	6,016	5,789	7,934	8,280
Confectionery	1,449	1,682	2,038	2,044	2,094	2,123	2,043	2,800	2,922
Dairy Products	406	472	571	573	587	595	573	785	819
Fish Markets	77	89	108	108	111	113	108	148	155
Meat Markets	6,338	6,237	6,787	6,888	6,448	7,157	7,960	7,730	7,908
Other	1,197	1,389	1,683	1,688	1,729	1,753	1,687	2,312	2,413
Total	451,974	524,603	634,960	724,478	795,533	886,664	986,270	1,125,273	1,261,299
Total Retail Sales (Chain & Independent)	1,908,587	2,070,121	2,417,370	2,539,229	2,621,549	2,770,750	2,913,379	3,159,319	3,407,138
Combined Advertising Costs as Per Cent of Sales	0.25	0.27	0.28	0.31	0.37	0.44	0.51	0.79	0.56

Sources: Retail Trade and The 1951 Census of Distribution, Volume VII, Table 13, D.B.S., Ottawa.

APPENDIX TABLE C
SALES VOLUME OF FOOD MERCHANT WHOLESALERS, CANADA, 1949 TO 1957
(Calendar Year)

Kind of Wholesaler	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Fresh Fruits & Veg's.....	167,469	173,706	183,428	212,407	202,027	211,145	217,540	233,446	231,804
Groceries & Food Specialties...	746,391	789,389	883,303	909,255	944,999	1,036,220	1,139,659	1,246,104	1,355,447
Meat Products...	70,135	74,691	81,899	76,795	81,242	80,934	77,663	82,039	81,477
Dairy Products..	78,142	83,219	91,248	85,563	90,517	90,174	86,529	91,404	90,779
Confectionery, Soft Drinks & Tobacco ^a	203,491	216,551	237,446	245,994	252,643	271,638	291,346	316,516	336,936
Fish & Sea Foods Frozen or Frosted	16,381	17,432	19,114	19,802	20,338	21,867	23,453	25,479	27,123
Foods.....	1,307	1,391	1,525	1,580	1,623	1,745	1,871	2,033	2,164
Other Food Products excl. Groceries	18,947	20,163	22,108	22,904	23,523	25,292	27,127	29,470	31,371
Produce.....	14,069	14,972	16,417	17,008	17,468	18,781	20,144	21,884	23,296
Total Sales	1,316,332	1,401,514	1,536,489	1,591,309	1,634,379	1,757,796	1,885,332	2,048,375	2,180,398

^a Does not include Cigar, Cigarette and Tobacco Wholesalers but does include Tobacco and Confectionery Wholesalers.

Sources: Wholesale Trade, and The 1951 Census of Distribution, Volume VIII, Table 3, D.B.S., Ottawa.

APPENDIX TABLE D

GROSS SELLING VALUE OF SHIPMENTS, F.O.B. PLANT, IN THE FOOD MANUFACTURING
INDUSTRY BY INDUSTRY ORIGIN, CANADA, 1949 TO 1957

(Calendar Year)

Industry Group	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Biscuits	64,935	64,900	71,900	75,650	75,515	71,117	71,678	71,610	78,203
Bread & Other Bkry. Prods.	203,720	214,587	245,288	260,181	277,998	280,208	289,019	306,805	331,132
Total Bkry. Prods.	268,655	279,487	317,188	335,832	353,513	351,325	360,697	378,416	409,335
Fish Process'g	111,919	128,424	163,100	134,725	137,086	153,457	159,888	188,675	171,466
Fruits & Veg.	148,762	161,092	200,779	211,788	205,119	215,030	234,075	249,884	265,470
Total Canning & Process'g	260,681	289,516	363,879	346,513	342,205	368,487	393,964	438,558	436,936
Butter & Cheese	355,004	330,709	373,746	378,795	396,956	412,205	427,092	431,255	469,852
Concent. Milk	54,705	55,027	67,052	72,230	67,747	68,948	71,584	79,699	89,436
Cheese Process.	22,699	22,480	26,349	25,483	27,271	29,393	25,281	27,435	29,512
Ice Cream	8,817	9,068	10,383	11,993	12,697	11,166	12,099	13,394	12,945
Total Dairy Products	441,224	417,284	477,530	588,500	504,671	521,712	536,056	551,783	601,745

APPENDIX TABLE D (Continued)

GROSS SELLING VALUE OF SHIPMENTS, F.O.B. PLANT, IN THE FOOD MANUFACTURING
INDUSTRY BY INDUSTRY ORIGIN, CANADA, 1949 TO 1957

(Calendar Year)

Industry Group	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Flour Mills	241,250	247,108	280,867	274,208	266,431	232,363	221,895	221,770	204,376
Animal Feeds	171,850	178,902	198,970	206,117	195,785	215,440	215,848	250,958	249,034
Prep.Bkfst.Fds.	18,412	19,095	23,696	24,636	24,865	25,604	28,584	30,968	32,527
Total Grain Mill Prods.	431,512	445,104	503,533	504,961	487,080	473,407	466,327	503,696	485,937
Animal Oils & Fats	1,905	3,076	4,569	3,430	3,376	5,430	5,913	5,174	5,934
Sausage & Csgs.	11,141	13,479	18,040	17,407	19,492	23,159	26,760	30,133	33,952
Meat Packing	697,950	757,043	892,091	863,776	829,468	837,508	809,468	844,889	907,088
Total Meat Prods.	710,996	773,599	914,700	884,614	852,336	866,098	842,141	880,196	946,973

APPENDIX TABLE D (Continued)

GROSS SELLING VALUE OF SHIPMENTS, F.O.B. PLANT, IN THE FOOD MANUFACTURING INDUSTRY BY INDUSTRY ORIGIN, CANADA, 1949 TO 1957

(Calendar Year)

Industry Group	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Confectionery	165,772	176,016	170,528	183,655	184,146	185,195	184,308	196,066	211,922
Macaroni &									
Kindred Prods.	5,903	7,101	8,064	8,536	8,125	9,385	9,897	12,022	12,734
Sugar Refining	116,767	144,873	139,109	129,038	117,952	117,807	119,673	126,690	155,023
Misc. Food	200,295	226,812	252,023	256,382	274,518	295,687	303,751	334,668	336,292
Total Other Food Prods.	488,738	554,801	569,724	577,611	584,742	608,075	617,629	669,446	715,971
Total Carbon. Beverages	85,656	87,139	90,514	105,050	108,560	108,159	116,582	121,340	139,504
Grand Total	2,247,597	2,846,929	3,237,067	3,343,081	3,233,108	3,297,261	3,333,396	3,543,435	3,736,401
Grand Total (excluding Carb. Beverages)	2,161,941	2,759,790	3,146,554	3,238,031	3,124,547	3,189,103	3,216,813	3,422,095	3,596,897

Source: The Foods and Beverages Industry, D.B.S., Ottawa.

AGGREGATE COSTS OF COLD STORAGE OF FOOD PRODUCTS

The purpose of the study was to determine the changes in physical volume and total costs of cold storage operations as they applied to the domestic sales of the following food products:

- Meats (frozen) (including beef, pork, veal,
mutton and lamb, and poultry);
- Dairy Products (butter and cheese);
- Fruits (frozen);
- Vegetables (frozen);
- Eggs (fresh and frozen);
- Apples (fresh);
- Fish.

Sales of frozen food in consumer packages have been increasing rapidly, but at the time of this study, they constituted still only a small part of the sales of any product. On the other hand, storage operations, which are carried on by the trade to correlate production and consumption, have long been an established function of food merchandising. The cost estimates which follow apply to cold storage operations between the original producer and the retailer.

Canada has had a Cold Storage Act since 1907 which has provided for a subsidy to aid in the construction and equipping of cold storage warehouses. Originally, the Act allowed subsidies up to 30% of the approved cost of construction and equipping cold storage warehouses. In 1952, the amount was increased to 33-1/3%. In February, 1958, regulations were changed to make the subsidy the lesser of 33-1/3% of the cost of construction and equipment, or \$50,000. As a condition of receiving the subsidy, the warehouse firm has to accept maximum tariffs, as set by Order-in-Council. The extent of the subsidy program between 1907 and 1958 is indicated in the summary given in Table 1.

Without a detailed study of the industry, it was not possible to determine the effect of the subsidy upon rates charged and, therefore, upon storage costs. In general, however, the rates would tend to be lower, to the extent of interest and depreciation costs on about one-third of the investment in cold storage facilities in Canada, provided that a reasonable degree of competition exists. Thus, part of the real cost of cold storage (i.e., the effect of the subsidy on rates) has been excluded from the estimates presented here by using competitive rates applied to the volume stored.

Estimates of the aggregate costs of freezing and storing the commodities specified for each of the years, 1949 to 1957, are given in Table 2. The sources of data and methods used in arriving at these estimates are contained in Appendix A. In Table 3, the estimates of aggregate costs are shown as indexes.

Table 4 contains index numbers of the rates applied to estimated quantities handled and frozen. Table 5 also presents in index

number from the rates for storage applied to estimated storage volume - this being a composite of the factors of quantity and time period held.

No account is taken in these estimates of storage costs of the Price Support Program. Appendix B contains a statement of these costs.

TABLE 1. COLD STORAGE WAREHOUSE SUBSIDIES AND GRANTS,
1907 TO MARCH 31, 1958

Province	Number Given	Total Refrigerated Space Involved (thousand cu. Ft.)	Approved Total Cost (\$ thousand)	Approved Subsidy (\$ thousand)
<u>Subsidy - 30% of Approved Expenditure</u>				
P.E.I.	9	291	191	57
N.S.	21	4,987	4,010	1,194
N.B.	8	1,545	1,030	309
Que.	31	2,073	2,015	602
Ont.	59	9,138	6,111	1,827
Man.	8	3,135	2,160	648
Sask.	20	630	737	221
Alta.	5	625	476	142
B.C.	66	22,625	9,400	2,880
Total	227	45,050	26,129	7,820
<u>Subsidy - 33-1/3% of Approved Expenditure</u>				
Nfld.	2	44	200	67
P.E.I.	2	47	117	39
N.S.	2	10	39	13
N.B.	5	330	776	259
Que.	26	3,504	3,216	1,072
Ont.	25	4,164	4,562	1,503
Man.	2	19	64	21
Sask.	3	542	1,025	342
Alta.	4	823	1,678	559
B.C.	6	640	340	113
Total	77	10,122	12,017	3,988

Source: Canada Department of Agriculture, Marketing Service, Transportation and Storage Section.

TABLE 2. ESTIMATES OF AGGREGATE COSTS OF HANDLING, FREEZING AND COLD STORING SPECIFIED
CANADIAN FOOD PRODUCTS FOR THE DOMESTIC MARKET, 1949 TO 1957

Year	Frozen Meats	Dairy Products	Frozen Fruits	Frozen Vegetables	Fresh &		Apples	Total (excluding Fish)	Fish	Total (including Fish)
					Frozen Eggs	Frozen				
(\$ thousand)										
1949	1,288	1,513	490	185	727		1,210	5,413	1,474	6,887
1950	1,257	1,658	450	253	687		1,845	6,150	1,539	7,689
1951	1,302	1,337	551	316	383		1,631	5,520	1,447	6,967
1952	2,058	1,590	574	277	632		1,197	6,328	1,603	7,931
1953	2,428	2,207	581	369	446		1,512	7,543	1,814	9,357
1954	1,763	2,642	714	535	566		1,710	7,930	1,454	9,384
1955	1,631	3,077	806	556	693		1,860	8,623	1,542	10,165
1956	2,028	3,033	732	800	333		1,877	8,803	1,753	10,556
1957	2,091	2,594	785	1,006	936		2,092	9,504	1,881	11,385

TABLE 3. INDEX NUMBERS OF AGGREGATE COSTS OF HANDLING, FREEZING AND COLD STORING
SPECIFIED CANADIAN FOOD PRODUCTS FOR THE DOMESTIC MARKET, 1949 TO 1957

Year	Frozen Meats	Dairy Products	Frozen Fruits	Frozen Vegetables	Fresh &		Apples	Total (excluding Fish)	Fish	Total (including Fish)
					Frozen Eggs	Frozen Fish				
(1949 = 100)										
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950	97.6	109.6	91.8	136.8	94.5	100.0	152.5	113.6	104.4	111.6
1951	101.1	88.4	112.4	170.8	52.7	100.0	134.8	102.0	98.2	101.2
1952	159.8	105.1	117.1	149.7	86.9	100.0	98.9	116.9	108.7	115.1
1953	188.5	145.9	118.6	199.4	61.3	100.0	124.9	139.3	123.1	135.9
1954	136.9	174.6	145.7	289.2	77.8	100.0	141.3	146.5	98.6	136.2
1955	126.6	203.4	164.5	300.5	95.3	100.0	153.7	159.3	104.6	147.6
1956	157.4	200.5	149.4	432.4	45.8	100.0	155.1	162.6	118.9	153.3
1957	162.3	171.4	160.2	543.8	128.7	100.0	172.9	175.6	127.6	165.3

TABLE 4. INDEX NUMBERS OF RATES FOR HANDLING AND FREEZING FOOD COMMODITIES, 1949 TO 1957

Year	Meat	Butter	Cheese	Fruit	Vegetables	Eggs (Fresh)	Eggs (Frozen)	Apples	Fish
(1949 = 100)									
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950	116.9	121.2	115.4	98.5	98.2	123.9	128.0	100.0	100.0
1951	127.3	130.3	123.1	100.0	101.8	139.9	137.4	120.2	105.0
1952	126.5	130.3	110.8	100.0	101.8	139.9	141.2	120.2	105.0
1953	133.7	154.5	124.6	108.9	117.7	159.4	147.9	142.7	115.0
1954	137.3	154.5	124.6	105.0	115.0	165.9	157.8	142.7	115.0
1955	137.3	154.5	124.6	106.9	115.0	165.9	157.8	142.7	115.0
1956	141.8	154.5	124.6	116.2	123.9	165.9	157.8	142.7	122.0
1957	161.8	171.2	133.8	125.1	134.1	168.8	162.1	161.8	122.0

TABLE 5. INDEX NUMBERS OF RATES FOR STORING FOOD COMMODITIES, 1949 TO 1957

Year	Meat	Butter	Cheese	Fruit	Vegetables	Eggs (Fresh)	Eggs (Frozen)	Apples	Fish
(1949 = 100)									
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950	96.4	100.0	100.0	99.2	99.1	100.0	92.3	100.0	100.0
1951	96.4	100.0	102.6	99.2	99.1	100.0	92.3	100.0	100.0
1952	100.0	100.0	95.7	99.2	99.1	102.3	92.3	108.3	100.0
1953	108.1	111.6	107.0	106.0	116.6	110.2	98.6	116.0	106.0
1954	108.1	111.6	107.0	106.0	116.6	110.2	92.8	116.0	106.0
1955	108.1	111.6	107.0	106.0	116.6	110.2	92.8	116.0	106.0
1956	108.1	111.6	107.0	106.0	116.6	110.2	92.8	116.0	106.0
1957	114.0	116.4	106.1	99.6	109.6	106.6	100.9	129.9	106.0

APPENDIX A

Methods and Sources of Data

1. General

Estimates of aggregate costs of cold and cool storage of Canadian-produced foods for domestic consumption were calculated from a series of components. The estimated total costs include not only those of holding food in storage, but also the costs of handling and freezing. The component statistics required were:

- | | |
|-------------------|---|
| (a) Quantities | <ul style="list-style-type: none"> (i) For storage - Quantities and time for which stored; (ii) For handling and freezing - Quantities put into storage and through the freezing process. |
| (b) Rates Charged | <ul style="list-style-type: none"> (i) For storage; (ii) For handling and freezing. |

Additional to the foregoing was a requirement that the estimates of aggregate cost be limited to those for products of Canadian origin utilized in the domestic market.

Basic physical data on the storage, movement, freezing and foreign trade in products were obtained from monthly and annual publications of the Dominion Bureau of Statistics. The publications were the monthly and annual reports on "Stocks of Food Commodities in Cold Storage and Other Warehouses", the reports "Trade of Canada, Exports" and "Trade of Canada, Imports", "The Fruit and Vegetable Preparations Industry" and "Fish Freezings and Stocks".

2. Total Storage Volume

For purposes of calculating the total cost of storing, it was assumed that the amount in store at the beginning of each month was held for one month. By adding the stocks reported for each month, estimates of the total amount stored for each year were obtained. This aggregate volume was expressed in pound-months for each product. The cost of holding these stocks was then calculated by multiplying the total annual volume by the storage rate applicable, and expressed in dollars per pound-month. The derivation of these rates is referred to in a later paragraph.

3. Handling and Freezing Volume

The preparation of estimates of total costs of handling and freezing presented greater difficulties than for storage costs. The difficulties arose primarily because of lack of basic statistical data for several products. Referring to the cold storage statistics collected by the Dominion Bureau of Statistics, three situations were encountered, into which commodities fell in the following categories:

- Category 1. Commodities for which statistics of in-and-out-of-storage movements (freezings) were available.
- Category 2. Commodities for which the above-mentioned statistics were not available, but which were characterized by a marked seasonal pattern into and out of storage.
- Category 3. Commodities for which the statistics of in-and-out-of-storage movements were not available and which were not characterized by a seasonal pattern.

Category 1 included frozen fruits, frozen vegetables, and fish. No problems in estimating were involved in these because in-and-out-of-storage movement and freezing statistics were available.

In Category 2, were products for which the required statistics were not available, but in which there were marked seasonal storage patterns. These comprised eggs, butter, cheese, and apples.

Category 3 proved the most troublesome because within it fell meat products, including poultry meat. Unsuccessful attempts were made to obtain data on the quantity of meat and poultry products handled and frozen through a special survey.

For products in Category 2, it had to be assumed that the total amount placed in storage would be the sum of the increments in the amount reported in cold storage on the first of each month over that reported in store on the first of the previous month, less net exports, (exports minus imports). The same procedure finally had to be applied to the meat and poultry meat items in Category 3, but it was recognized that for these products, the method would yield at best only a minimum figure for meat handling and freezing costs. The method obviously would not take into account offsetting in-and-out movements occurring within each month.

Having thus obtained estimates of total quantities for each

of the products as described in the foregoing, these quantities were multiplied by a weighted average cost of handling and/or freezing at the principal storage points in Canada.

4. Tariffs (Storage, Handling and Freezing Rates)

The tariffs were obtained from: (1) the files of the Transportation, Storage and Retail Section, Marketing Service, Canada Department of Agriculture, which administers the Cold Storage Act; (2) from published tariffs of the National Harbour Board Cold Storage Warehouses. These tariffs applied to principal warehouses in Canada and a weighted average was calculated for each product based upon the volume of storage in various locations in Canada. The weights used were determined from quantities handled, and are set out hereunder:

WEIGHTS USED IN DERIVING COLD STORAGE TARIFFS

	Meat	Butter	Cheese	Fruit	Vegetables	Eggs	Apples	Fish
Vancouver				2	2		1	1
Winnipeg	2	.75	.5	1	1	2		
Toronto	1	1.00	3.0	3	3	1	1	
Montreal	1	1.00	3.0	3	3	1	1	
Quebec	1	1.00	3.0	3	3	1		
Halifax	1	.75	.5	1	1	1	1	1

APPENDIX B

Storage in Price Support Programs

The aggregate costs shown in Table 2 do not take into account the effect of the price support programs, which include storage incurred in whole or in part as a cost to the government. The following is a tabulation of storage costs incurred in price support programs. It would not be valid to subtract these costs from the calculated annual storage costs for each product to obtain the portion entering into price spread because (1) the storage costs of price support apply to a program, rather than to any specific year, and (2) the programs have included export sales, against which should be charged a portion of the storage costs incurred in the price support programs.

STORAGE COSTS IN PRICE SUPPORT PROGRAMS

Year of Production to which Program Related	Butter	Cheese	Eggs (dollars)	Fowl	Apples
1951	168,025				
1952	919,235	32,071		32,071	
1953	994,905				
1954	1,940,673		62,942		5,683
1955	1,835,585		1,132		
1956	1,918,068		1,792		
1957	166,006		315,395	15,833	

MEAT - 1952 PROGRAM AND SUBSEQUENT STORAGE COSTS

Canned Pork	\$ 8,434
Pork Cuts	233,995
Beef U.K.	11,736
Bone-in Beef	371,279
Boneless Beef	100,317
Live Cattle (Regina)	32,886
Offals	428
N.Z. Beef Storage	982,877
	339,788
Beef Sold to Greece	17,488

EXPENDITURES ON PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, 1949-1957

This study presents estimates from 1949 through 1957 of packaging material and container expenditures in the food manufacturing sector of the Canadian economy, as defined by the Dominion Bureau of Statistics. The Carbonated Beverages industry is included, but segregated; the Beer and Liquor industries are excluded.

This study includes estimates of the cost of packaging materials and containers only. It was not possible to estimate other costs of packaging such as labour, machinery, depreciation and overhead contribution. The estimates presented here include packaging material and container expenditures of packaged food products for export as well as for the domestic market.

The data were drawn from annual D.B.S. reports on the various groups in the Foods and Beverages industry for the years 1949 to 1957.

Results

Addition of the costs of the various types of packaging materials and containers used in the Foods and Beverages industry yielded totals for the years 1949-57, by kind of food manufacturing business in current dollars (Table 1). The cost of packaging materials and containers increased from \$147.6 million in 1949 to \$254.2 million in 1957, an increase of 83%.¹ (If the carbonated beverages group is excluded, the increase is 84%.)

No acceptable food container price index was available to determine the extent of real increase in packaging costs. However, an attempt was made to remove the effect of price increases by deflating with the D.B.S. general index of wholesale prices. The results are given in Table 2. Real costs of packaging materials and containers increased from \$147.6 million in 1949 to \$235.4 million in 1957, an increase of 59%. (If the carbonated beverages group is excluded, the increase is 61%.)

The increase in the aggregate real costs of packaging materials and containers was due to an increase in the quantity of food processed as well as to increases in the amount of packaging per unit of food. Taking the data in Table 2 and adjusting for increases in output by using the D.B.S. Indexes of Industrial Production, the increases in the amount of packaging per unit of food provided in the third column of Table 3 were obtained. The average increase for the foods industry

¹ The totals given here differ from those given in Part IV of Volume II. The differences are accounted for by the exclusion there of the cost of packaging materials and containers for certain groups such as carbonated beverages and for products destined for export.

as a whole was 20% over the period 1949 to 1957.

From the results in Tables 1, 2 and 3, it will be noted that price inflation and increases in processed food output have played major roles in increasing the costs of food packaging materials and containers. However, even when the effects of price increases and output are discounted, the real cost of packaging a unit of food product has increased from 1949 to 1957.

Table 3 gives the per cent changes for expenditures on packaging materials and containers from 1949 to 1957, by food industry sectors. The Bakery Products and Other Food Products groups had the greatest increases in the amount of packaging per unit of food. As Table 3 notes, there has been a real increase of 56.3% in the packaging of bakery products between the years 1949 and 1957. In purchasing bakery items, the consumer is really buying eye appeal and freshness. She is in the market for a relatively small quantity purchase at any given time. This convenience-of-purchase factor, coupled with the tendency to buy "ready-to-eat" bakery goods, has resulted in the use of a greater amount of packaging material per unit. Plain and fancy soda biscuits have been handled in consumer-sized packages previous to the last decade. There is little doubt, however, that biscuits are now being packaged with better quality and more materials and containers to ensure freshness and sales appeal than ten years ago. In the same manner, while wrapped bread has been on the market well over a decade, more advanced bread wrapping materials are in use. It is noted from Table 1 that all of the packaging materials in the Bakery Products industry have enjoyed increased use; cellophane and other visual flexible materials seem to have made the biggest gains. The increased use of cellophane and other flexible plastics, such as polyethylene, are understated because the unit cost of cellophane and polyethylene materials have declined in the past decade,¹ rather than increased.

In the Other Food Products group, the main subgroup is the Miscellaneous Food Preparations industry. Some of the principal products in this industry have characteristics that allow them to capitalize on the growing trend of "built-in maid services" or greater convenience packaging (fillings, powders, mixes); others have witnessed more elaborate convenience packaging, either in variations of packaging sizes or in higher quality materials (margarine, potato chips, salad dressings); also, a great many of these products are being packaged, branded and sold by retail chains and large wholesale organizations. It appears that the advent of television and the increased importance of home entertainment have popularized miscellaneous food products when put in more convenient package forms and sizes. Another casual factor dictating the use of more elaborate packaging may be the increasing competition amongst processors for retail shelf space.

While expenditures for the packaging of grain mill products

1 "Film Packages", Modern Packaging, June, 1957, p. 114.

per unit of product have declined, the packaging costs of breakfast foods have increased since 1949. (See Table 1 for the relative increases in current dollars.) One striking trend in cereal packaging has been the proliferation of sizes, especially at either extreme of the scale. Cereal package sizes are getting larger, supposedly to conform to the increasing number of larger size families and the tendency of the shopper to make fewer trips to the store; and packages are also getting smaller to permit the purchase of several variety type packages to meet the differing preferences of members of the household.¹ In addition, cereal packages are becoming more colourful; today the package is printed in four or five colours instead of the two or three of a decade ago. This is to allow for greater eye appeal on the shelf, as most packages picture the product usually in conjunction with the fruit.²

Appendix Table D to the document on "Food Advertising Expenditures, 1949-57" presents the gross selling value of shipments, f.o.b. plant, of the food manufacturing sector, by industry group. Table 4 is the result of dividing the data found in Table 1 on the cost of food packaging materials and containers by the data found in Appendix Table D to the study of advertising expenditures. Table 4 presents the per cent of the given industry's sales dollar that is absorbed by costs of packaging materials and containers. Packaging costs have been increasing at a slightly greater rate than sales volume. Stated differently, expenditures on packaging materials and containers accounted for a greater share of the sales dollar in 1957 than they did in 1949 -- 7.1¢ of the dollar in 1957 compared to 6.4¢ of the dollar in 1949.

Generally, the ratios of packaging materials and containers cost to sales exhibits stability over the period. The per cent range is from 2% - 3% for Meat Products to 15% - 19% for Canning and Processing. The range is even greater when the individual subgroups are considered separately. About 25¢ of every sales dollar is spent for packaging materials in the Fruit and Vegetable Preparation industry. Generally, it can be said that a greater per cent of the sales dollar is devoted to packaging by the manufacturer when the food product is sold to the ultimate consumer in the same package.

While the ratio of packaging materials costs to sales is relatively stable over the period under study, there are some exceptions to this generalization. The ratios for Biscuits and Processed Cheese have increased considerably; in fact, in both cases the ratios have almost doubled.

1 "Those Changing Cereal Packages", Packaging Trade, October, 1957, p. 56, Haywood Publishing Co., Chicago, Illinois.

2 Ibid.

TABLE 1. THE COST OF PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, BY INDUSTRY, 1949 TO 1957

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
Bakery Products									
Biscuits									
Waxed Wrappers....	394	461	589	749	785	866	819	866	926
Cartons & Shipping Containers.....	2,431	2,399	2,903	3,760	4,085	4,409	4,723	4,428	4,223
Cardboard Cake and Candy Boxes.....	607	956	914	982	685	684	562	1,148	1,067
Cellulose Film....	518	1,093	954	1,293	1,565	1,724	1,806	2,202	2,408
Other Covering & Containers.....	1,153	998	1,731	1,360	1,760	1,508	1,022	2,129	2,415
Total Biscuits	5,103	5,906	7,092	8,143	8,880	9,191	8,933	10,773	11,039
Bread and Other Bakery Products									
Waxed Bread Wrappers	4,957	5,733	6,452	7,031	8,686	8,248	8,397	8,918	9,522
Bread Cartons & Cake Boxes.....	3,856	4,545	4,802	4,995	5,103	5,940	6,339	6,246	7,043
Cellophane & Other Containers.....	2,354	2,659	3,116	3,578	3,791	5,606	7,308	9,217	10,194
Total Bread, etc.	11,168	12,937	14,369	15,604	17,580	19,795	22,043	24,381	26,760
Total: Bakery Products	16,271	18,843	21,462	23,748	26,460	28,985	30,976	35,154	37,799

TABLE 1. THE COST OF PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, BY INDUSTRY, 1949 TO 1957 (continued)

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
(\$ thousand)									
<u>Canning & Processing</u>									
Fish Processing & Packaging Containers Used...	7,320	8,355	12,598	10,964	11,100	11,397	10,638	11,776	12,301
Fruit & Vegetable Preparations - Containers & Packaging Material (including cases, cans, bottles, labels, corks, etc.).....	34,877	35,662	43,223	48,142	47,652	53,021	59,825	59,527	70,264
Total: Canning & Processing.....	42,197	44,016	55,820	59,106	58,753	64,419	70,463	71,303	82,565
<u>Dairy Products</u>									
Butter, Cheese & Concentrated Milk Products.....	6,731	6,996	7,571	9,172	10,830	12,083	13,201	14,294	a
Concentrated Milk Products Containers.....	8,095	8,493	11,089	11,229	9,175	9,403	9,768	10,994	a
Cheese, processed containers.....	1,981	2,221	2,289	2,506	3,298	3,927	3,937	4,346	4,840
Ice Cream: Cones and containers.....	577	684	761	932	994	915	1,095	1,098	1,258
Total: Dairy Products.....	17,384	18,355	21,710	23,839	24,297	26,328	28,002	30,733	30,486

TABLE 1. THE COST OF PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, BY INDUSTRY, 1949 TO 1957 (Continued)

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
(\$ thousand)									
Grain Mill Products									
Feed, stock, poultry, prepared, and Feed Mills (containers & packaging materials)	7,091	6,837	8,080	8,178	6,290	7,541	7,199	9,714	9,902
Flour Mills - cost of containers purchased.....	14,971	15,418	19,689	17,642	14,588	14,279	14,149	14,164	12,848
Breakfast Foods - containers and packaging.....	2,434	2,658	3,449	3,596	3,392	3,479	3,777	4,610	4,606
Total: Grain Mill Products	24,496	24,913	31,218	29,415	24,270	25,299	25,126	28,487	27,356

TABLE 1. THE COST OF PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, BY INDUSTRY, 1949 TO 1957 (Continued)

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
(\$ thousand)									
<u>Meat Products</u>									
Animal Oils and Fats- Containers & Other Packaging Materials & Supplies.....	12	34	55	73	55	73	98	95	64
Sausages & Sausage Casings -									
Containers & Other Packaging Materials and Supplies, ex- cluding Sausage Skins.....	133	174	219	240	413	498	615	790	1,093
Slaughtering and Meat Packing -									
Containers, Wrappers Cases, etc.....	13,265	14,368	16,039	22,629	18,871	20,366	21,270	23,635	23,794
Total: Meat Products	13,410	14,577	16,313	22,942	19,340	20,936	21,982	24,520	24,950

TABLE 1. THE COST OF PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, BY INDUSTRY, 1949 TO 1957 (Continued)

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
(\$ thousand)									
<u>Other Food Industries</u>									
<u>Confectionery</u>									
Waxed Wrappers	601	672	699	1,009	967	1,085	865	928	841
Cartons & Shipping Containers.....	1,207	1,593	1,314	1,413	1,670	3,161	2,685	2,165	2,455
Cardboard Cake & Candy Boxes.....	2,095	2,137	1,894	2,431	2,346	2,341	2,482	3,113	3,544
Cellulose Film	537	1,088	839	1,349	896	1,230	1,560	1,738	2,586
Other Covering & Containers.....	2,615	4,025	3,808	3,469	4,656	4,408	4,656	5,100	5,424
Total Confectionery	7,055	9,515	8,554	9,672	10,536	12,226	12,248	12,043	14,860
Macaroni & Kindred Products -Containers	538	656	780	424	927	1,591	1,249	1,530	1,693
Sugar Refining-Containers, boxes, bags....	4,963	5,298	5,006	5,589	5,629	5,812	6,041	6,042	5,865
Misc. Food Preparations-Containers & Packaging Materials.....	11,813	15,828	17,608	18,628	20,078	22,276	23,825	26,245	28,621
Total: Other Food Industries	24,370	31,298	31,948	34,314	37,172	41,905	43,362	46,860	51,040

TABLE 1. THE COST OF PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, BY INDUSTRY, 1949 TO 1957 (Continued)

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(\$ thousand)								
<u>Carbonated Beverages</u>									
Boxes,Cases,Labels, Crowns,Corks,Caps, etc.....	5,896	5,689	5,872	6,251	6,767	6,312	7,098	8,236	8,982
New Bottles Purchased During Year.....	3,584	3,274	3,254	3,733	4,559	4,692	5,498	6,491	6,768
Total Carbonated Beverages...	9,480	8,963	9,126	9,984	11,326	11,004	12,596	14,727	15,750
GRAND TOTAL	147,607	160,965	187,598	203,348	201,617	218,876	232,507	251,784	269,946
GRAND TOTAL (Ex- cluding Beverages)	138,128	152,002	178,472	193,364	190,291	207,873	219,911	237,057	254,195

a Figures not available at time of writing

Source: Reports on Groups in The Foods and Beverages Industry, Dominion Bureau of Statistics.

TABLE 2. THE COST OF PACKAGING MATERIALS AND CONTAINERS IN THE FOOD MANUFACTURING INDUSTRY, 1949 TO 1957

Industry	(1949 dollars)									
	1949	1950	1951	1952	1953	1954	1955	1956	1957	
	(\$ thousand)									
Bakery Products	16,271	17,694	17,722	20,831	23,774	26,495	28,058	30,891	32,955	
Canning & Processing	42,197	41,330	46,094	51,847	52,788	58,884	63,825	62,656	71,893	
Dairy Products	17,384	17,235	17,927	20,911	21,830	24,066	25,364	27,006	26,579	
Grain Mill Products	24,496	23,392	25,779	25,803	21,806	23,125	22,759	25,032	23,850	
Meat Products	13,410	13,687	13,471	20,124	17,376	19,137	19,912	21,547	21,753	
Other Food Products	24,370	29,388	26,382	30,100	33,398	38,305	39,278	41,177	44,498	
Carbonated Beverages	9,480	8,416	7,536	8,758	10,176	10,058	11,409	12,941	13,732	
Total	147,607	151,141	154,911	178,375	181,147	200,071	210,605	221,250	235,349	
Total (Excluding Carbonated Beverages)	138,128	142,725	147,375	169,617	170,971	190,012	199,196	208,309	221,618	

Source: Table 1 data deflated by the D.B.S. General Wholesale Price Index, base year shifted to 1949. General Wholesale Price Index from D.B.S. Statistical Review, 1957 Supplement.

TABLE 3. THE PER CENT CHANGES FROM 1949 TO 1957 FOR EXPENDITURES ON PACKAGING MATERIALS AND CONTAINERS, FOOD MANUFACTURING INDUSTRY

Industry Group	Per Cent Change		
	In Current Dollars	In 1949 Dollars	In 1949 Dollars Adjusted for Increases in Production
Bakery Products	132.3	102.5	56.3
Canning and Processing	95.7	70.4	18.6
Dairy Products	75.4	52.9	12.1
Grain Mill Products	11.7	-2.6	-16.5
Meat Products	86.1	62.2	12.3
Other Food Industries	109.4	82.6	46.0
Carbonated Beverages	66.1	44.9	11.7
Total	82.9	59.4	17.6
Total, excluding carbonated beverages	84.0	60.4	20.5

TABLE 4. EXPENDITURES FOR PACKAGING MATERIALS AND CONTAINERS AS A PER CENT OF GROSS SELLING VALUE OF SHIPMENTS, F.O.B. PLANT, IN THE FOOD MANUFACTURING INDUSTRY, CANADA, 1949 TO 1957

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(Per Cent)								
Biscuits	7.86	9.10	9.86	10.76	11.76	12.92	12.46	15.04	14.11
Bread & Other Bakery Products	5.48	6.03	5.86	6.00	6.32	7.06	7.63	7.95	8.08
Total Bakery Products	6.06	6.74	6.77	7.07	7.48	8.25	8.59	9.29	9.23
Fish Processing & Packing	6.54	6.51	7.71	8.14	8.10	7.43	6.65	6.22	7.17
Fruit & Vegetable Preparations	23.45	22.14	21.53	22.73	23.23	24.66	25.56	23.82	26.47
Total Canning and Processing	16.19	15.20	15.34	17.06	17.17	17.48	17.89	16.26	18.90
Butter and Cheese	1.90	2.10	2.03	2.42	2.73	2.93	3.09	3.31	a
Concentrated Milk Products	14.80	15.43	16.54	15.55	13.54	13.64	13.65	13.79	a

a Figures not available at time of writing.

TABLE 4. EXPENDITURES FOR PACKAGING MATERIALS AND CONTAINERS AS A PER CENT OF GROSS SELLING VALUE OF SHIPMENTS, F.O.B. PLANT, IN THE FOOD MANUFACTURING INDUSTRY, CANADA, 1949 TO 1957

Continued

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(Per Cent)								
Cheese Processed	8.73	9.88	8.69	9.84	12.09	13.36	15.57	15.84	16.40
Ice Cream	6.55	7.55	7.33	7.77	7.83	8.20	9.05	8.20	9.72
Total Dairy Products	3.94	4.40	4.55	4.91	4.81	5.05	5.22	5.57	5.07
Feed, Stock & Poultry Prepared & Feed Mills	4.13	3.82	4.06	3.97	3.21	3.50	3.34	3.87	3.98
Flour Mills	6.21	6.24	7.01	6.43	5.48	6.14	6.38	6.39	6.39
Foods, Breakfast	13.22	13.92	14.56	14.59	13.64	13.59	13.21	14.89	14.16
Total Grain Mill Products	5.68	5.60	6.20	5.83	4.98	5.34	5.39	5.66	5.66
Animal Oils & Fats	.62	1.11	1.20	2.12	1.63	1.34	1.66	1.84	1.08
Sausage & Casings	1.19	1.29	1.21	1.38	2.12	2.15	2.30	2.62	3.22
Slaughtering & Meat Packing	1.90	1.90	1.80	2.62	2.28	2.43	2.63	2.80	2.62
Total Meat Products	1.89	1.88	1.78	2.59	2.27	2.42	2.61	2.79	2.63

TABLE 4. EXPENDITURES FOR PACKAGING MATERIALS AND CONTAINERS AS A PER CENT OF GROSS SELLING VALUE OF SHIPMENTS, F.O.B. PLANT, IN THE FOOD MANUFACTURING INDUSTRY, CANADA, 1949 TO 1957

Continued

Industry	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(Per Cent)								
Confectionery	4.26	5.41	5.02	5.27	5.72	6.60	6.65	6.65	7.01
Macaroni & Kindred Products	9.12	9.24	9.67	4.97	11.42	16.95	12.62	12.72	13.29
Sugar Refining	4.25	3.66	3.60	4.33	4.77	4.93	5.05	4.77	3.78
Misc.Food Preparations	5.90	6.98	6.99	7.27	7.31	7.53	7.84	7.84	8.51
Total Other Food Products	4.99	5.64	5.61	5.94	6.36	6.89	7.02	7.00	7.13
Total Carbonated Beverages	11.07	10.29	10.08	9.50	10.43	10.17	10.80	12.14	11.29
GRAND TOTAL	6.57	5.65	5.80	6.08	6.24	6.64	6.98	7.11	7.22
GRAND TOTAL (Excluding Beverages)	6.39	5.51	5.67	5.97	6.09	6.52	6.84	6.93	7.07

FARM COMMODITY PRICE SPREAD STUDIES

INDIVIDUAL COMMODITIES - INCOME, EXPENDITURE AND CONSUMPTION

The commodities studied were selected on the basis of their importance to primary producers and consumers in general across Canada, or in particular localities. The importance of these commodities is set out here in relation to farm income, consumer expenditures, and per capita consumption of all foods.

Table 1 shows income from the sale of selected agricultural commodities as percentage of total cash income from the sale of farm products. The commodities (or commodity groups) listed are those for which individual commodity studies were carried out. It should be noted, however, that the commodity studies frequently had to be restricted to only one class or grade. Over the period 1949-57, the commodities and commodity groups listed in Table 1 accounted for 83.4% of total cash income from farm products. Some of this, of course, represented sales that were destined for export. Of the whole group, wheat has been the largest single contributor to farm income, followed by cattle and calves, dairy products, hogs, and poultry and eggs. These major commodities accounted for 77.2% of total cash farm income. The remainder of 6.2% represented income from the sale of potatoes, vegetables, fruits, sugar beets, and maple products. If we exclude income from those vegetables and fruit that were not included in our commodity studies, then farm cash income of the latter group will drop to less than 4%.

The importance of selected commodities to consumers can be indicated by referring to Tables 2 and 3.

Table 2 illustrates the distribution of the food dollar spent by an urban family on food consumed at home.¹ Among the food products purchased by consumers are those which were included in the commodity studies conducted by the Commission. These are indicated by capital letters in Table 2. The selected products accounted for an average of about 57% of food expenditures for the four surveys. Their importance increases considerably when compared with expenditure on food of Canadian farm origin. Our estimates show that over the period 1949-57, the expenditures on selected products represented about 72% of total expenditure on food consumed at home, and being of Canadian farm origin.

Commodities which accounted for major portions of farm income accounted also for major portions of consumer expenditures on food, but their order of importance changed. Table 2 shows that over the period under study, families allocated their expenditure on major groups of food in relatively stable proportions, spending 24.7% on meat, 17.7% on dairy products, 8.1% on poultry and eggs, 12.6% on cereals and bakery products, 9.4% on vegetables, 8.7% on fruit, 0.7% on frozen foods, 13.9% on general groceries, 1.6% on fats and oils, and 2.6% on fish.

¹ Food purchased and eaten away from home is not included in these estimates.

Table 3 shows that over the period 1949-57, average annual per capita consumption of selected products, as measured at retail, has been about 1,055 pounds. This represented 74% of total food consumed per person annually. In terms of quantity consumed, fluid milk and cream have taken first place, followed by potatoes, wheat flour, meats, refined sugar, etc.

The averages of farm income, food expenditure, and per capita consumption as shown in Tables 1, 2 and 3 differ to some extent from those given in Part V of Volume II of the Report. The main reason is the difference in the length of the period taken for calculation of these estimates. The estimates presented in Tables 1, 2 and 3 referred to here are all based on the same period, 1949-57, whereas in Volume II different time periods are taken for the individual commodities.

TABLE 1. INCOME OF SELECTED AGRICULTURAL COMMODITIES AS PER CENT OF TOTAL CASH INCOME
FROM FARM PRODUCTS, CANADA, 1949 TO 1957

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
	(per cent)									
Cattle and Calves	17.0	22.7	19.7	13.8	14.1	16.5	18.4	17.1	18.7	17.4
Hogs	12.1	13.4	12.2	11.8	10.7	13.5	12.3	11.3	11.3	12.0
Dairy Products	15.1	16.0	13.9	14.9	14.9	18.0	18.7	16.4	17.9	16.0
Poultry and Eggs	7.5	7.8	8.9	8.6	9.7	11.0	12.0	11.1	10.7	9.7
Wheat	28.3	18.0	25.0	26.3	28.0	17.7	15.2	19.8	17.7	22.1
Potatoes	1.4	1.4	1.0	2.3	1.1	1.2	1.4	1.6	1.5	1.5
Vegetables	1.9	2.0	2.0	2.4	2.2	2.4	2.5	2.2	2.7	2.3
Fruits	1.5	1.6	1.3	1.5	1.7	2.0	1.7	1.4	1.6	1.6
Sugar Beets	.4	.6	.6	.5	.5	.5	.6	.5	.6	.5
Maple Products	.3	.3	.2	.3	.2	.3	.3	.3	.3	.3
Total	85.5	83.8	84.8	82.4	83.1	83.1	83.1	81.7	83.0	83.4

Source: D.B.S., Handbook of Agricultural Statistics, Part II, Farm Income, 1926-57, Reference Paper No. 25, and Farm Cash Income, 1958.

TABLE 2. AVERAGE URBAN FAMILY FOOD EXPENDITURES, CANADA, 1948/49, 1953, 1955 AND 1957^a (PATTERNS OF THE DISTRIBUTION OF THE FOOD DOLLAR ON FOOD CONSUMED AT HOME).

	1948/49	1953	1955	1957	4-Year Average
	(per cent)				
<u>Meats</u>	25.2	24.4	24.0	25.2	24.7
BEEF	10.3	11.2	11.2	11.4	11.0
PORK	8.6	8.0	7.3	7.8	7.9
Other	6.3	5.2	5.5	6.0	5.8
<u>Dairy Products</u>	18.3	17.3	17.2	17.8	17.7
FRESH MILK, Cream and Buttermilk	10.0	9.1	9.2	10.0	9.6
CANNED and Powdered Milk	.8	.8	.7	.9	.8
CHEESE, All Kinds	1.4	1.9	1.9	1.9	1.8
BUTTER	5.9	4.7	4.6	4.3	4.9
Ice Cream	.2	.8	.8	.7	.6
<u>Poultry and Eggs</u>	8.1	8.3	8.0	8.3	8.1
POULTRY ^b	3.2	3.7	3.7	4.3	3.7
EGGS	4.9	4.6	4.3	4.0	4.4
<u>Cereals and Bakery Products</u>	11.7	12.5	11.8	14.2	12.6
FLOUR	.9	.6	.6	.5	.7
BREAD	5.3	4.8	4.7	5.7	5.1
Breakfast Cereals	.8	1.4	1.1	.9	1.0
Other Bakery and Cereal Products	4.7	5.7	5.4	7.1	5.8
<u>Vegetables</u>	10.1	8.9	10.1	8.6	9.4
POTATOES	2.2	1.7	1.9	1.5	1.8
Tomatoes	1.1	1.0	1.1	.9	1.0
Other Fresh Vegetables	3.6	3.5	3.9	3.6	3.7
CANNED TOMATOES ^c	.9	.3	.4	.3	.5
CANNED PEAS	.7	.6	.6	.5	.6
Other Canned and Dried Vegetables	1.6	1.8	2.2	1.8	1.8
<u>Fruit</u>	10.5	8.4	8.3	7.8	8.7
APPLES	1.4	1.2	1.2	1.1	1.2
Other Fresh Fruit	6.1	4.6	4.5	4.1	4.8
CANNED PEACHES	.6	.5	.5	.3	.5
Canned Fruit Juice	.8	.8	.7	.9	.8
Other Canned and Dried Fruit	1.6	1.3	1.4	1.4	1.4

TABLE 2. AVERAGE URBAN FAMILY FOOD EXPENDITURES, CANADA, 1948/49, 1953, 1955 AND 1957^a (PATTERNS OF THE DISTRIBUTION OF THE FOOD DOLLAR ON FOOD CONSUMED AT HOME). (Cont'd.)

	1948/49	1953	1955	1957	4-Year Average
	(per cent)				
<u>Frozen Foods</u>	n.a.	.5	1.1	1.0	.7
Frozen Fruit	-	.3	.5	.5	.3
Frozen Vegetables	-	.2	.3	.3	.2
Other Frozen Foods ^d	-	-	.3	.2	.2
<u>General Groceries</u>	11.2	15.2	15.6	13.5	13.9
SUGAR	2.2	1.5	1.2	1.5	1.6
Soup	1.4	1.3	1.4	1.4	1.4
Baby Food)		.6	.9	.9	
Other Groceries)	7.6	11.8	12.1	9.7	10.9
<u>Fats and Oils^e</u>	2.0	1.8	1.7	1.2	1.6
Margarine)		.9	.7	.5	
Other Fats and Oils)	2.0	.9	1.0	.7	1.6
<u>FISH</u>	2.9	2.7	2.2	2.4	2.6
Total Food Consumed at Home	100.0	100.0	100.0	100.0	100.0

a Adapted from D.B.S., Urban Family Food Expenditure Surveys for 1948/49, 1953, 1955 and 1957.

b 1948/49 Survey takes poultry and game together.

c For 1948/49 includes tomato juice; in later years tomato juice is included with other canned and dried vegetables.

d 1957 Survey excludes frozen fish; in that year frozen fish are included with fish, and amount to 0.3% of total food consumed at home.

e Excluding butter, which is included with dairy products.

TABLE 3. APPARENT DOMESTIC DISAPPEARANCE OF SELECTED FOOD PRODUCTS OF AGRICULTURAL ORIGIN, CANADA, 1949 TO 1957^a

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
	(pounds per capita)									
Meats										
Beef - Carcass Wt.	59.2	53.3	53.1	56.7	66.9	72.6	71.9	74.6	77.8	65.1
Pork - Carcass Wt.	54.6	54.9	58.6	56.0	48.7	45.4	49.2	49.5	46.2	51.5
Dairy Products										
Fluid Milk & Cream										
- Retail Wt.	412.4	411.6	405.6	391.3	394.3	392.2	386.6	395.1	390.5	397.7
Evaporated Milk										
- Retail Wt.	14.8	17.5	17.9	18.3	18.5	18.0	18.4	18.6	18.3	17.8
Process Cheese										
- Retail Wt.	2.6	2.3	2.1	2.8	3.0	2.9	2.7	2.8	2.7	2.7
Butter, Creamery										
- Retail Wt.	19.6	20.2	19.2	19.0	19.2	19.2	19.2	19.5	19.4	19.4
Poultry & Eggs										
Poultry - Retail Wt.										
Eviscerated	15.8	16.1	18.0	21.7	19.8	21.7	24.3	25.6	25.9	21.0
Eggs (All Grades)										
- Fresh Egg Equivalent	29.0	30.0	30.0	33.3	34.4	35.9	36.0	36.5	38.1	33.7

TABLE 3. APPARENT DOMESTIC DISAPPEARANCE OF SELECTED FOOD PRODUCTS OF AGRICULTURAL ORIGIN, CANADA, 1949 TO 1957a (Cont'd.)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
	(pounds per capita)									
<u>Cereals & Bakery Products</u>										
Wheat, Flour										
- Retail Wt.	149.4	156.0	152.3	149.0	145.5	148.1	142.1	143.3	138.5	147.1
<u>Vegetables</u>										
Potatoes ^b - Retail Wt.	153.2	182.0	125.6	149.7	166.0	134.3	147.9	160.3	144.7	151.5
Canned Tomatoes										
- Net Wt. Canned	4.8	7.0	6.9	6.1	6.0	6.7	5.7	6.2	5.7	6.1
Canned Peas										
- Net Wt. Canned	7.3	6.8	6.7	6.6	6.5	6.4	7.1	7.0	7.4	6.9
Frozen Peas - Retail Wt.	.3	.3	.4	.5	.7	.8	1.4	1.7	1.8	.9
Canned Corn										
- Net Wt. Canned	4.9	5.0	5.5	4.7	5.1	5.0	4.9	5.2	5.2	5.1

a Fish are not included in this table; the average annual per capita consumption over the 1949-57 period was 13.5 pounds.

b Crop Year.

TABLE 3. APPARENT DOMESTIC DISAPPEARANCE OF SELECTED FOOD PRODUCTS OF AGRICULTURAL ORIGIN, CANADA, 1949 TO 1957a (Cont'd.)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
	(pounds per capita)									
<u>Fruit</u>										
Fresh Apples ^b	28.1	27.7	25.2	22.5	21.5	23.0	32.8	21.6	24.1	25.1
- Retail Wt.										
Strawberries, Processed (Canned & Frozen)										
- Retail Wt.	.5	.5	.6	.9	1.0	.9	1.0	1.2	1.2	.9
Canned Peaches										
- Net Wt. Canned	3.2	3.7	3.5	3.4	4.0	3.9	3.8	4.1	3.4	3.7
<u>Special Products</u>										
Refined Sugar										
- Refined Wt.	99.5	101.1	96.3	97.7	96.6	96.3	99.0	99.3	93.6	97.7
Maple Syrup - Retail Wt.	1.4	1.8	1.4	1.9	.6	1.2	1.0	1.2	1.5	1.3

Total for
Products Listed 1,060.6 1,097.8 1,028.9 1,042.1 1,058.3 1,034.5 1,055.3 1,073.0 1,046.0 1,055.2

Source: Dominion Bureau of Statistics, Agriculture Division.

BEEF

Price Spreads on Beef Produced and Sold in Canada,
and the Main Marketing Influences Thereon

1. Characteristics of Cattle and Beef Affecting their Price and Cost of Marketing

Beef cattle leave the farm, ranch or feedlot alive, and usually by truck in the first instance except for farm kill, for farm use and peddling.¹ They may continue by truck or rail transport to a country auction, packing plant, public stockyards or to the United States or to a Canadian port for overseas export. Where cattle are marketed by rail, they are usually picked up by truck at the farm and transported to the loading station. Sometimes, particularly in western Canada, cattle are driven on the hoof to the railroad shipping point.

Since most cattle are purchased on a delivered basis, the expense of transporting the livestock from the farm is a direct charge against the farmer. The weight ticket may be issued at a country point, an auction, a public stockyard, or a packing plant. Therefore, there is also part of the costs of shrinkage and bruising in transit to be borne by the producer.

There are now about 112 cattle auctions operating at country points in Canada - about 68 in eastern Canada and about 44 in western Canada.² In 1948 there were less than 20 altogether. Figures are not available on the volume of sales at these community auctions, but it has increased rapidly. Livestock sold at country auction move on to a public stockyard for resale or to a packing plant or back to the country for feeding or to export.

Of cattle sales in 1957, (other than at country auction for feeding)¹ about 63% were offered on public stockyards, about 32% were delivered directly from the country to packing plants, and the remaining 5% went directly for export. In a general way, the pattern of prices is established at the 11 public stockyards - the bulk of the cattle

1 Farm-Consumed Cattle, Canada 1948-57, thousand head

1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
141.6	115.3	104.4	81.7	93.4	121.5	144.1	143.8	144.1	158.6

Source: D.B.S. estimates.

2 Not including one-day auction sales such as 4H Calf Club sales.

3 Unless the rail shipment of such feeder cattle happens to stop at a public stockyard on through billing from one province to another.

are offered for sale there, all of the regular buyers are represented there, and official stockyard market reports are issued. Prices determined at country auction and for direct deliveries are related to these stockyard quotations. There has been a slight decline in recent years, however, in the proportion of cattle sold through public stockyards, and so the influence of the stockyards on price setting may have lessened. Since 1950, all of the public stockyards except Toronto have adopted the auction method of selling cattle.

The buyers of beef cattle represent several interests - inspected packing plants, approved abattoirs, local butchers, feeder buyers (farm and feedlot operators) and U.S. importers. At the largest public stockyard, Toronto, during the first part of the week when receipts are heaviest, there are approximately 25 actual cattle buyers in the cattle alleys. On this market only limited numbers of slaughter cattle are bought on order, i.e., purchased for shipment to packing plants in eastern Canada or in the United States. On the other hand, a large number of feeder cattle (including calves) are sold each year on the Toronto market and shipped to numerous feedlots throughout Ontario. Some feedlot operators and farmers come in to select their requirements, but the bulk of the 100,000 feeders are purchased on order.

At a large western market like Calgary a sizeable percentage of the slaughter cattle are purchased for shipment either to the west coast, eastern Canada or to the United States. Packing plants from the south, west and the east place orders to buy with either the commission firms or the order buyers operating on the market. Whereas, in Toronto, the individual buyer generally represents one specific firm, in Calgary an order buyer may be actually purchasing for several different packers.

Beef cattle are usually marketed when they approximate a certain weight and degree of finish. There is some latitude with respect to the finish for slaughter cattle, but heavy steers (over 1,150 pounds) and heavy heifers (over 900 pounds) may be sharply discounted in price. The bulk of the cows are marketed at the end of the milk-production or grazing season. Bull marketings are heaviest in summer and autumn. Feeder cattle move to market towards the end of the grazing season. Occasionally, during periods of heavy marketings, the producer has to hold cattle back from delivery to stockyards and packing plants.

Live cattle are not graded officially; the estimated yield and official carcass grade are the main factors in establishing the price of a particular animal. Daily price quotations are reported on the public stockyards for four unofficial grades of steers and heifers - Choice, Good, Medium and Common - and for four unofficial grades of cows - Good, Medium, Common, Cannors and Cutters.

Beef cattle, excluding feeders, are usually slaughtered within a few days of leaving the farm. Occasionally, the slaughtering is done by one firm and the cutting and processing by another. Beef goes from the packer to retailer mostly as carcasses, although there is a trend towards more cutting in the abattoir.

There is a quickening interest in the sale of cattle on the basis of dressed weight and official rail grade, particularly for the top two grades of cattle. The number of sales so handled has been increasing. For example, the buyer may agree to pay \$ X per cwt. alive with the seller guaranteeing that the cattle will yield Y per cent carcass weight and officially grade all Red Brand (Choice).

The Health of Animals Division of the Canada Department of Agriculture provides a free meat inspection service at packing plants that are under federal inspection. There are 56 inspected plants across the country. All edible meat and meat products from these plants carry the legend mark indicating that they have been prepared according to federal requirements.

The Livestock Division of the Canada Department of Agriculture also provides a free beef grading service. Official graders are available at each plant under federal inspection to grade (upon request by the packer) beef carcasses. Since 1929, all beef slaughtered at inspected plants has been graded in accordance with the federal grades. The official grades for beef carcasses, their description in terms of equivalent live animal, and the percentage of total inspected slaughtering falling in each grade in 1949 and 1958 are shown in Table 1.

The bulk of the beef sold in fresh form over the retail counter comes from the top four carcass grades - Choice, Good, Standard, and Commercial Classes 1 and 2. In addition, nearly all of the Utility Classes 1 and 2 are also sold unprocessed. Virtually all of the Manufacturing and Bull grades of beef are merchandised in processed form (canned meats, bologna, frankfurters etc.)

There has been a shift over the last decade towards a higher proportion of Choice (i.e., Red Brand) and Good (i.e., Blue Brand) carcasses. In 1949, Red and Blue carcasses combined accounted for about 18.7% of inspected slaughtering. In 1958, however, these two top grades of carcasses accounted for about 40.2% of inspected slaughtering.

Beef, like other fresh meat, is a perishable product unless chilled, frozen or processed. Meat men have an expression which points up the urgency in their operations - "You either sell it or smell it". Beef requires careful handling, and is subject to shrinkage (dehydration) and discoloration, as well as to deterioration. These characteristics call for either rapid turnover of fresh beef or else regulated refrigeration and careful packaging.¹ Safeway stores advertised it this way:²

1 Mr. Thomas G. McCormack, president of Dominion Stores Ltd., has been reported (in Canadian Grocer, Dec. 20, 1958, p. 2) as saying that the average annual turnover of meat (in Supermarkets) is 175 times, compared with vegetables 225, frozen foods 45, groceries 30, and non-foods 13 times.

2 Advertisement in Winnipeg Free Press, Sat. Nov. 29, 1958, "Meat Dept. Manager Plays Key Role in Supermarket".

"The latest innovation in the handling of fresh meats gives a guarantee of refrigeration at all times. Direct from the Packers to a walk-in cooler, it moves next into a refrigerated cutting room. In this spotlessly clean area it is cut, trimmed, prepared and placed on platters and trays ready for wrapping. Next through a refrigerated trough to wrapping and weighing stations and finally to the refrigerated display case."

TABLE 1. OFFICIAL GRADES FOR BEEF CARCASSES, DESCRIPTION IN TERMS OF LIVE CATTLE, AND PROPORTION OF INSPECTED KILL IN EACH GRADE, CANADA, 1949 AND 1958.

<u>Official Grade</u>	<u>Description in Terms of Live Cattle</u>	<u>% of Kill</u>	
		<u>1949</u>	<u>1958</u>
Choice	Choice steers & heifers	6.4	24.1
Good	Good steers & heifers	12.3	16.1
Standard	Top Medium steers & heifers)		9.0
Commercial - Class 1	Low Medium steers & heifers)		7.7
	)	28.5	
	- Class 2 Good & Medium young cows of)		1.8
	beef type)		
- Class 3	Carcasses overfat for above)		0.3
	grades)		
Utility - Class 1	Common steers, heifers &)	9.7	3.8
	young cows)		
	- Class 2 Good & top Medium mature)	11.9	10.7
	cows)		
- Class 3	Low Medium & Common mature)	9.6	8.3
	cows)		
Manufacturing	Cutter & Canner cows, "boner" steers & heifers	16.6	14.3
Bulls	Bulls	<u>5.0</u>	<u>3.9</u>
		100.0	100.0

Source: Canada Department of Agriculture, annual Livestock Market Review, Ottawa.

Under special circumstances, the tenderness of beef may improve with keeping, but enough shrinkage and waste result to limit this kind of beef to the luxury restaurant trade.

Beef is a heavy product and requires a lot of manhandling.

2. General Disposition of the Supply

Cattle numbers on farms and beef production and prices are characterized by a cyclical pattern of behaviour with an average cycle duration of about 12 years.¹ This is clearly visible in Chart 1. When cattle marketings are in their upward phase of the cycle, prices are in their downward phase, and vice versa. The Commission's decade of study 1949-58 does not comprise a full cycle and, therefore, comparisons and conclusions over this period must be made with great caution. The year 1957 marked the turning point from the upward phase of the last cattle population cycle to the downward phase of the next cycle. The preceding peak in numbers was in 1945, which means that the latest cycle has had a duration of about 12 years. The previous cattle population cycle extended over the 11-year period 1934-45.

In attempting to describe the general disposition of the supply of beef, it is necessary to include in the period of study at least the last full cattle population cycle. In order to say something reliable about trends in disposition at least the last two population cycles should be compared.² This is done in Table 2; the table contains comparable numbers of exported and domestically slaughtered cattle, dressed weight of slaughterings, imports, exports, and changes in stocks of beef, and beef consumption in Canada, for the last two cycles.³

There is another influence on beef prices and consumption which must be mentioned here - the substitutability of beef and pork in the consumer's food budget. When pork prices are low relative to beef prices, consumers tend to eat more pork and less beef, and when pork prices are high relative to beef, consumers tend to eat more beef and less pork. Since pork production and prices are also subject to cycles, this matter of substitutability of beef and pork is important.

Table 2 suggests that there has been an upward trend in the numbers of live beef cattle exported in the last 25 years. Although the increase in exports of young cattle has been prominent, there has been a more than compensating decline in exports of live cattle of over 700 pounds in weight. In other words, the total weight of live beef cattle exports has declined over the last two cattle population cycles.

-
- 1 When cattle numbers on farms are lagged in comparison with average value per head over the last four decades, the closest inverse correlation results from an 11-year lag.
 - 2 In view of the fact that the 1934-45 cycle included some years of drought, depression and war, it would be better to compare the last three cattle population cycles, but deficiencies in data make this unfeasible.
 - 3 The first of these two cycles should begin with 1934, but the comparable figures for that year are not available. The omission is not serious, however, because the cattle population in 1935 was not much lower than in 1934.

CHART 1. NUMBER OF CATTLE AND CALVES ON FARMS
IN CANADA AS AT JUNE 1ST, 1906 TO 1958

Million
Head

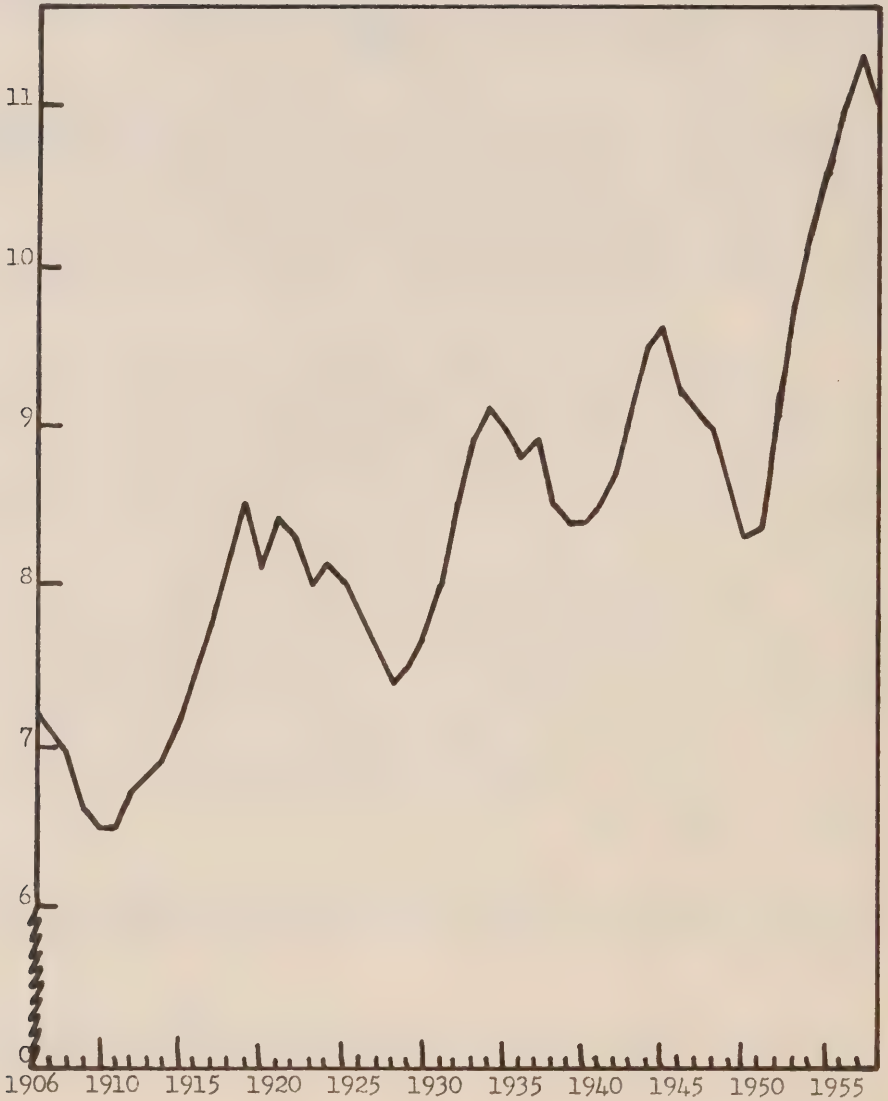


TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF
TWO CATTLE POPULATION CYCLES, 1935-45^a AND 1945-57

	Live Cattle Exports			Domestic Slaughter		Stocks of Beef ^d	
	Total Number	Number 200-700 lb. ^b	Number Over 700 lb.	Number of Cattle	Estimated Cold Dressed Weight ^c (thousand lbs.)	Beginning of Year (thousand lbs.)	End of Year (thousand lbs.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1935	97,576	-	97,576 ^k	1,274,700	595,395	22,858	21,976
1936	215,738	32,811	182,927	1,336,200	619,472	21,976	23,947
1937	203,724	27,746	175,978	1,397,900	623,122	23,947	25,302
1938	112,893	4,254	108,639	1,389,000	639,170	25,302	19,337
1939	189,268	5,481	183,787	1,337,200	615,620	19,337	29,639
1940	134,284	2,803	131,481	1,402,500	643,459	29,639	21,848
1941	163,442	5,769	157,673	1,515,500	723,739	21,848	32,209
1942	126,896	2,695	124,201	1,525,500	751,434	32,209	29,204
1943	3,120	377	2,743	1,585,600	789,605	29,204	35,637
1944	4,008	304	3,704	1,872,300	920,371	35,637	31,831
1945	5,863	355	5,508	2,400,600	1,142,540	31,831	40,842
Total	1,256,812	82,595	1,174,217	17,037,000	8,063,927	293,788	311,772
Average	114,256	8,260	106,747	1,548,818	733,084	26,708	28,343

^a This production cycle should begin with 1934, but comparable data for that year are not available.

^b From April 1936 through 1938, 175-200 lb.

^c Less offal, but including beef used for canning.

^d In cold storage, including frozen bone-in and boneless beef, unfrozen beef and fancy beef meat, and unfrozen cured and in-cure beef. Excludes frozen fancy meat after 1950, and canned beef.

TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF TWO CATTLE POPULATION CYCLES, 1935-45^a AND 1945-57 (Cont'd.)

	Live Cattle Exports		Domestic Slaughter		Stocks of Beef ^d	
	Total Number	Number 200-700 lb. ^b Over 700 lb.	Number of Cattle	Estimated Cold Dressed Weight ^c (thousand lbs.)	Beginning of Year (thousand lbs.)	End of Year (thousand lbs.)
	(1)	(2)	(3)	(4)	(6)	(7)
1945	5,863	355	5,508	2,400,600	31,831	40,842
1946	6,201	715	5,486	2,215,900	40,842	30,642
1947	6,245	1,194	5,051	1,944,100	30,642	43,038
1948	313,778	71,382	242,396	1,939,400	43,038	35,313
1949	320,088	103,322	216,766	1,843,400	35,313	23,415
1950	362,446	159,253	203,193	1,673,500	23,415	22,174
1951	170,739	46,334	124,405	1,591,800	19,556	17,357
1952	6,930	2,251	4,679	1,719,400	17,357	29,385
1953	25,102	1,435	23,667	2,004,600	29,385	33,103
1954	52,671	3,630	49,041	2,222,300	33,103	23,648
1955	21,832	1,872	19,960	2,271,100	23,648	29,682
1956	4,222	1,271	2,951	2,441,200	29,682	33,251
1957	334,925	139,493	195,432	2,602,500	33,251	29,712
Total	1,631,042	532,507	1,098,535	26,869,800	391,063	391,562
Average	125,465	40,962	84,503	2,066,908	30,082	30,120

^e Including small quantities of veal, but excluding canned beef.

^f Cold dressed carcass equivalent weight. Conversion factor 1936-53, 2.17; 1954-57, 1.98.

^g Excluding small exports of beef component of canned sausage, weiners etc.

TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF TWO CATTLE POPULATION CYCLES, 1935-45^a AND 1945-57 (Cont'd.)

	Beef Imports and Exports		Beef Used for Canning ^h (thousand lbs.) (11)	Non-Civilian Disappearance of Beef ⁱ (thousand lbs.) (12)	Apparent Domestic Consumption Fresh & Canned ^j (thousand lbs.) (13)	Apparent Domestic Consumption per Capita (lbs.) (14)
	Imports	Exports ^k				
	Beef (thousand lbs.) (8)	Canned Beef (thousand lbs.) (9)	Beef (thousand lbs.) (10)			
1935	142	22,488 ^l	13,794	-	605,113	55.80
1936	123	26,163	12,745	-	631,042	57.63
1937	93	25,378	17,654	-	629,584	57.00
1938	111	22,356	5,788	-	661,814	59.34
1939	320	32,208	4,515	-	633,331	56.21
1940	233	22,683	3,913	30,358	670,253	58.89
1941	1,509	15,685	7,905	43,565	722,667	62.80
1942	915	9,865	15,961	51,911	749,258	64.29
1943	375	12,239	13,549	63,418	782,237	66.32
1944	23	12,258	107,411	64,546	829,047	69.40
1945	2	1,416	194,754	63,896	940,193	77.88
Total	3,846	202,739	397,989	-	7,854,539	62.53
Average	350	18,431	36,181	-	714,049	-

^h Included in cold dressed weight of slaughtered cattle.

ⁱ Excluding canned beef.

^j Columns (5) + (6) - (7) + (8) + (9) - (10).

^k Over one year old.

^l Nine months only.

TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF TWO CATTLE POPULATION CYCLES, 1935-45^a AND 1945-57 (Cont'd.)

	Beef Imports and Exports		Beef Used for Canning ^b (thousand lbs.) (11)	Non-Civilian Disappearance of Beef ^c (thousand lbs.) (12)	Apparent Domestic Consumption, Fresh & Canned ^d (thousand lbs.) (13)	Apparent Domestic Consumption per Capita (lbs.) (14)
	Imports	Exports				
	Beef (thousand lbs.) (8)	Canned Beef (thousand lbs.) (9)	Beef (thousand lbs.) (10)			
1945	2	1,416	194,754	63,896	940,193	77.88
1946	6	-	138,191	-	931,659	75.79
1947	8	738	50,952	-	863,719	68.82
1948	8	1,223	133,822	-	785,497	61.26
1949	7,163	20,159	106,903	-	795,681	59.17
1950	10,587	22,311	90,740	-	731,140	53.32
1951	11,891	41,073	96,910	-	743,806	53.09
1952	11,338	24,535	68,054	-	819,791	56.70
1953	13,924	17,928	28,819	-	993,396	66.92
1954	18,499	25,241	22,580	-	1,109,542	72.58
1955	19,829	25,775	12,787	-	1,129,402	71.95
1956	18,266	21,395	18,634	-	1,199,975	74.62
1957	21,974	31,871	55,312	-	1,290,310	77.78
Total	133,495	233,665	1,018,458	-	12,334,111	67.08
Average	10,269	17,974	78,343	-	948,778	-

Sources: Dominion Bureau of Statistics and Canada Department of Agriculture, Handbook of Agricultural Statistics Part IV, Food Consumption in Canada 1926-55 Reference Paper 25, Ottawa 1958, Table VI. D.B.S. Livestock and Animal Products Statistics, 1957, and Trade of Canada, annual.

Table 2 shows that there has been a definite upward trend in the number of cattle slaughtered domestically from an average annual cold carcass weight of 733 million pounds over the 1935-45 cattle population cycle to 999 million pounds over the 1945-57 cycle. Concurrently, there has been a slight upward trend in stocks of beef in cold storage in Canada.

Both exports and imports of fresh beef have increased prominently during the last 25 years. Imports of fresh beef have increased from an average annual figure of 350 thousand pounds (cold carcass weight) over the 1935-45 cattle cycle, to 10 million pounds over the 1945-57 cycle. Imports of canned beef have not increased during the period, however, and may have declined slightly. There has been, however, a marked increase in amount of beef slaughtered for canning - from an annual average of 15 million pounds (cold carcass weight) over the 1935-45 period to 32 million pounds over the 1945-57 period.

Exports of fresh beef increased from an annual average of 36 million pounds (cold carcass weight) over the 1935-45 cattle cycle to 78 million pounds over the 1945-57 cycle.

Most of our cattle and beef exports go to the United States, and most of our cattle and fresh beef imports come from the United States and New Zealand. Most of our canned beef imports come from Australia and Argentina.

In recent years the U.S. tariff on Canadian Slaughter and Feeder cattle, weighing 700 pounds and over, has been $1\frac{1}{2}\phi$ a pound on a 400,000-pound quota and $2\frac{1}{2}\phi$ a pound over the quota.¹ Canada has no quota on beef cattle imports from the United States, and our tariff is $1\frac{1}{2}\phi$ a pound. On beef cattle weighing 200-699 pounds, the U.S. tariff is $2\frac{1}{2}\phi$. Canada has the same import tariff as the United States on fresh and frozen beef - i.e., 3ϕ a pound.² Canada has no duty on canned beef imports from Australia and New Zealand; otherwise, a British Preferential duty of 15% is in force and a Most Favoured Nation duty of 30%.

The net effect of the foregoing trade on the disposition of the supply of beef has been a substantial increase in domestic beef consumption, not only to supply the growing population of Canada, but also per capita. Table 2 shows that apparent domestic consumption of beef (fresh and canned) increased from an annual average of 714 million

1 For a historical summary of U.S. tariffs on Canadian cattle see Canada Department of Agriculture, Livestock Market Review 1957, Ottawa, p. 31. Also see p. 3 of this publication.

2 Canada Department of Agriculture, Canada and the United States Tariffs on Selected Agricultural Products, Ottawa, March 1957, p. 5. Canada has a duty of 2ϕ per lb. and free British Preferential on pickled beef, compared with 3ϕ (minimum 20%) for the U.S. Canada has no duty on salted beef, compared with 3ϕ (minimum 20%) for the U.S. The U.S. duty on edible offal averages slightly higher than Canada's $1\frac{1}{4}\phi$ (minimum 6%). The U.S. duty on canned beef is 3ϕ (minimum 20%).

pounds (cold carcass weight) over the 1935-45 cycle to 949 million pounds over the 1945-57 cycle. Concurrently, per capita beef consumption increased from an annual average of $62\frac{1}{2}$ pounds to 67 pounds. United States figures for these two periods were 56.7 and 69.9 pounds per capita.¹ A warning must be issued against making invalid comparisons between years (e.g., 1951 and 1957) that are in different phases of the cattle cycle.

3. Stocks in Cold Storage

In keeping with the rising long-run trend in beef consumption, opening and closing stocks of beef increased from annual averages of 26.7 million pounds (opening) and 28.3 million pounds (closing) during the 1935-45 beef population cycle.

The foregoing data on stocks of beef comprise beef in cold storage (i.e., in packers' and wholesalers' warehouses), and include frozen bone-in and boneless beef, frozen fancy beef meats, unfrozen beef and fancy beef meats and cured and in-cure beef. ("Fancy" beef meats includes tongue, heart, liver, kidney, tripe, etc.) Canned beef is not included in the cold storage stocks data.

The amount of each category of beef in storage varies seasonally. The averages for the beginning of each quarter over the 1945-57 period are shown in Table 3. November-to-January is the peak storage season. The table also shows the proportions of the total beef in storage over the period accounted for by the different categories. During the fourth quarter of the year, frozen boneless beef accounts for about a third of all beef in cold storage, frozen bone-in beef accounts for about a quarter, frozen fancy meats for about 11%, unfrozen fresh beef and fancy beef meats for about 29%, and cured and in-cure (unfrozen) beef for about 2%. The foregoing figures refer to storage inventories and not to turnover. Unfrozen fresh beef has to turn over faster in storage than frozen or cured beef.

Boneless beef is produced mainly from canner and cutter cows and bulls, but in part, also from common steers and heifers. In terms of the national grades of beef, shown in Table 1, it includes Manufacturing, Bull and a small proportion of the Utility Classes 1 and 2.

Boneless beef and fancy meats are stored principally during the peak of the cattle run, October to December. Storage provides a means of taking these products off the market at this plentiful season for marketing later during the scarce season, particularly the summer months. Boneless beef is used principally in manufacturing bologna, sausage, frankfurters and other prepared and cooked meats.

Bone-in beef, coming usually from the top grades of cattle, may be stored at any season of the year. This frozen beef is used to

¹ U.S.D.A. Agricultural Marketing Service, Supplement for 1956 to Consumption of Food in the United States 1909-52, Washington 1957, p. 13, and The National Food Situation, July 1958, p. 4.

fill orders for lumber, construction and mining camps, and for the boat trade. Bone-in beef, particularly loin and rib cuts, is also used by hotels, railway dining cars, restaurants, etc.

TABLE 3. STOCKS OF BEEF AND FANCY BEEF MEAT IN COLD STORAGE, FROZEN AND UNFROZEN, QUARTERLY OPENING AVERAGES, CANADA 1945-57.

(Thousands of Pounds)					
	<u>Jan. 1</u>	<u>Apr. 1</u>	<u>July 1</u>	<u>Oct. 1</u>	
<u>I - FROZEN</u>					
(a) Boneless Beef					
Annual Average	10,447	7,712	4,751	5,134	
% of Total Stocks	33.07	29.65	23.53	21.39	
(b) Bone-in Beef					
Annual Average	7,989	5,640	4,029	4,399	
% of Total Stocks	25.29	21.68	19.96	18.33	
(c) Fancy Meats					
Annual Average	3,405	2,775	2,291	2,682	
% of Total Stocks	10.78	10.67	11.35	11.17	
<u>II - UNFROZEN</u>					
(a) Fresh Beef and Fancy Meats					
Annual Average	9,116	9,221	8,574	11,224	
% of Total Stocks	28.86	35.45	42.47	46.76	
(b) Beef Cured and In-Cure					
Annual Average	630	662	544	566	
% of Total Stocks	1.99	2.54	2.69	2.36	
<u>III - TOTAL BEEF MEAT IN COLD STORAGE</u>					
Annual Average	31,587	26,010	20,189	24,004	

Source: D.B.S. Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, annual.

4. Geographical Pattern of Production and Marketing

The relative importance of cash income from cattle and calves has increased from about 13% of total cash farm income from farm products during the period 1934-45 to almost 17% during 1945-57. Ontario

and Alberta are the most important producers of cattle and veal for market, followed by Saskatchewan, Quebec, Manitoba, British Columbia, Nova Scotia, New Brunswick and Prince Edward Island. This is shown in Table 4. The table also shows that the Maritime region has produced a declining proportion of Canada's cash income from the sale of cattle and calves over the last 25 years. Even Quebec's, Manitoba's and British Columbia's shares have fallen off slightly. Ontario's share increased slightly from 36.6% to 37.1%, comparing the two cattle cycles, 1934-45 and 1945-57. Alberta's share increased more notably over the period, and Saskatchewan's share also increased.

The importance of cattle and calves within the agriculture of individual provinces varies. Table 4 contains comparable data for the last two cattle cycles in order to indicate trends. The importance of cattle and calves within all provinces has been increasing, most notably in Alberta and Ontario. Among the provinces, cattle and calves are most important within Ontario's agriculture. Cash income from the sale of cattle and calves increased in Ontario from 16.5% of all Ontario cash farm income during 1934-45 to 21.8% during 1945-57.

In spite of the large production of beef in Ontario and Quebec, these central provinces are, because of their relatively dense populations, a deficit region. The Prairie Provinces, on the other hand, are surplus producers of quality beef. The surplus cattle and beef from the Prairie Provinces, therefore, move out to markets, mainly in the central provinces but also to the Atlantic Provinces, to British Columbia and to the United States. Many beef cattle are raised in the Prairie Provinces and then move eastwards, particularly to Ontario, as feeders for finishing on grain closer to the final market. Most feeder cattle shipped from western to eastern Canada have to be T.B.-tested en route. This involves some delay and extra expense in marketing.

About 62% of Canada's 154 slaughtering and meat packing establishments are located in Ontario and Quebec.¹ Meat packing establishments are mainly of two sizes - large (\$1 million sales or over) and medium-small (\$100,000 to \$500,000 sales). About 75% of all establishments are incorporated companies, 12% are individually owned, 10% are partnerships, and less than 3% are co-operatives. Of course, there are many fewer meat packing firms than there are establishments (i.e., plants). In 1957, the big three (Canada Packers, Swifts and Burns) accounted for about 70% of total cattle slaughterings.

Alberta has become prominent as a cattle feeding area in recent years. A large volume of beef cattle are grain-finished in the feedlots located in the southern part of the province.²

In 1957, Alberta marketed 807,858 head of cattle, which was an increase of about 51% over the comparable year, 1945. The increase in

1 D.B.S. Slaughtering and Meat Packing Industries, Ottawa, annual.

2 See Frank Jacobs "Alberta vs. Ontario Feeder, Who's Top Dog?", reprinted from Canadian Cattleman, 1957, in Farming Today, Massey-Ferguson, Toronto.

TABLE 4. RELATIVE IMPORTANCE OF THE PROVINCES IN MARKETING CATTLE,
AND RELATIVE IMPORTANCE WITHIN THE AGRICULTURE OF EACH
PROVINCE AND CANADA OF INCOME FROM CATTLE.

Province	Period	Cash Income from Cattle & Calves as % Canada Total Income from Cattle & Calves	Cash Income from Cattle & Calves as % All Cash Farm Income
Ontario	1934-45	36.6	16.5
	1945-57	37.1	21.8
Alberta	1934-45	17.3	12.4
	1945-57	19.3	18.8
Saskatchewan	1934-45	15.3	8.7
	1945-57	16.1	11.9
Quebec	1934-45	12.6	11.7
	1945-57	12.0	13.9
Manitoba	1934-45	9.5	12.9
	1945-57	8.4	15.9
British Columbia	1934-45	3.8	11.7
	1945-57	3.5	14.2
Nova Scotia	1934-45	2.0	12.5
	1945-57	1.5	16.5
New Brunswick	1934-45	1.9	12.3
	1945-57	1.3	12.5
Prince Edward Island	1934-45	0.9	12.1
	1945-57	0.8	14.7
CANADA	1934-45	100.0	12.6
	1945-57	100.0	16.7

Source: D.B.S. Handbook of Agricultural Statistics Part II, Farm Income - 1926-57, Ottawa 1958.

all Canadian marketings over this period was about 29%. Concurrently, there was in excess of a sixfold increase in direct cattle exports from Alberta, compared with less than a fivefold increase in cattle exports from Canada as a whole. The majority of beef cattle exports would be of Choice and Good quality. The rate of increase in cattle marketings and exports over the period was greater for the six southern crop districts of Alberta than for the province as a whole.

There are several reasons for this increase in cattle feeding in southern Alberta: (1) the climate allows the use of open, uncovered feedlots. Adequate shelter is provided by a windbreak around the feedlot; (2) the irrigated land produces a supply of roughage (hay, silage, beet tops and pulp, pea vine, etc.); (3) with the rapid increase in the domestic demand for Red and Blue Brand beef, there has been an increasingly greater demand for finished cattle; (4) there is a supply of top quality feeder cattle right at hand on the ranges of southern Alberta; (5) proximity to the Pacific Northwest (Seattle, Spokane, Tacoma, Portland) places southern Alberta within reach of the high-priced markets, in the United States; (6) possession of unmarketable grain gives them a cheap feed for finishing cattle. Stocks of wheat in particular have increased on Alberta farms in recent years, and more wheat has been used for feed.

With respect to the geographical pattern of beef storage over the last cattle cycle, 1945-57, Ontario accounted for 27% of beef in cold storage in Canada, compared with 23% in Quebec, 17% in Manitoba, 13% in Alberta, 11% in British Columbia, 6% in Saskatchewan, and 3% in the Maritime Provinces. The relative importance of beef storage in Ontario and Quebec increased over the period in contrast with a decreasing relative importance of beef storage in the Prairie Provinces and the Maritimes.

5. Seasonal Pattern of Cattle and Beef Prices

Beef cattle marketings have a distinct seasonal pattern which results in an inverse seasonal pattern of prices. Heaviest marketings are in the autumn, particularly November, and this is the season when cattle prices are lowest. Marketings fall off thereafter, reaching a minimum during the three-month period April-June, and this is the season when cattle prices are highest. This seasonal pattern of beef cattle prices over the last cattle population cycle is summarized in Table 5.

Monthly wholesale prices of beef are not available for Canada as a whole, but they are available for carcass steer beef by certain major cities. Table 6 summarizes this seasonal price pattern for Montreal, Toronto, Winnipeg, and Vancouver over the 1945-57 period. The season of peak wholesale prices for beef is mid-summer, and winter is the low season.

Monthly retail prices of beef as such are not published, but there are retail prices of six cuts of beef at specified cities, from which Canada retail prices could be calculated. Table 7 summarizes these seasonal price patterns for Canada.

A comparison of Tables 5, 6 and 7 reveals that wholesale and retail prices for beef follow a different seasonal pattern than beef cattle prices. Wholesale and retail beef prices are highest in summer and lowest during winter, whereas beef cattle prices are highest during spring and lowest in the autumn. This difference in price patterns has direct implications for the seasonal pattern of the farm-wholesale and

TABLE 5. MONTHLY PATTERN OF CATTLE PRICES ON PUBLIC STOCKYARDS,
CANADA, AVERAGE 1934-45 AND 1945-57

(\$/cwt.)

Month	Average 1934-45	Average 1945-57
January	5.99	15.64
February	6.21	15.76
March	6.46	16.10
April	6.68	17.33
May	6.90	17.00
June	6.86	17.35
July	6.09	16.34
August	5.83	15.76
September	5.70	15.57
October	5.39	15.41
November	5.33	14.44
December	5.83	15.09

Source: Adapted from Canada Department of Agriculture Livestock Market Review, Ottawa, annual, using weighted average price for all cattle.

TABLE 6. MONTHLY PATTERNS OF WHOLESALE PRICES OF CARCASS STEER
BEEF, COMMERCIAL QUALITY, MONTREAL, TORONTO, WINNIPEG
AND VANCOUVER, AVERAGE 1945-57.

(Cents per Pound)

Month	Montreal	Toronto	Winnipeg	Vancouver
January	35	35	34	34
February	34	34	33	33
March	35	35	33	34
April	35	34	33	34
May	36	35	34	34
June	37	36	35	36
July	38	38	36	36
August	37	37	36	36
September	36	36	34	35
October	34	35	34	33
November	34	35	33	33
December	35	35	32	33

Source: Adapted from D.B.S. Quarterly Bulletin of Agricultural Statistics, Ottawa.

TABLE 7. MONTHLY PATTERNS OF RETAIL PRICES OF SIX CUTS OF BEEF,
CANADA, AVERAGE 1949-57

(Cents per Pound)

Month	Hamburg	Blade Roast	Stewing Beef	Rolled Rib Roast	Round Steak	Sirloin Steak
January	45.6	54.7	55.1	76.1	78.2	82.4
February	45.7	55.6	55.7	76.8	78.4	82.8
March	45.3	55.4	55.4	76.4	77.3	81.7
April	44.9	55.3	55.3	76.2	77.3	81.8
May	45.1	55.6	55.6	76.9	78.7	83.2
June	45.6	56.3	56.3	78.1	80.4	85.2
July	46.5	56.9	57.1	79.2	82.0	87.1
August	47.1	57.0	57.4	79.8	83.3	88.6
September	46.7	56.7	57.3	80.0	83.0	88.7
October	46.5	56.3	56.9	79.0	81.2	86.7
November	45.3	54.9	55.4	79.0	77.6	82.7
December	44.9	54.8	55.3	76.4	77.6	82.4

Source: D.B.S. Prices and Price Indexes, Ottawa, monthly.

farm-retail price spreads. These price spreads usually are widest in summer and narrowest during winter and spring.

6. Patterns of Cattle and Beef Prices by Grades and Regions

Steers and heifers account for over half of the cattle sold on public stockyards and slaughtered for beef in Canada and for a still higher proportion of the fresh beef. As explained earlier, heifers and each weight class of steer are graded unofficially into Choice, Good, Medium and Common. Grade for grade, steers fetch the highest price among slaughter cattle. Over the last cattle population cycle 1945-57, the most frequent classes and grades of beef cattle marketed on public stockyards were Medium and Good steers of less than 1,000 pounds in weight, Good and Choice steers of more than 1,000 pounds in weight, and Medium heifers.

During the low phase of the cattle cycle (when prices are high), the proportion of cattle marketed coming within the steer and heifer classes as a whole falls. Over the longer run, however, there has been an increase in the proportion of cattle marketed as steers on public stockyards. This is reflected in an increase over the last 12 years in the proportion of inspected carcasses grading in the top Red and Blue Brands. The increased importance of steers for beef has been most pronounced in steers weighing over 1,000 pounds, and in the Choice grade of all steers and heifers.

Stockyard prices are available for the two weight classes and four grades of steers and heifers for 11 major city markets across

Canada. A study was made of trends and cyclical patterns in these class and grade prices over the last 25 years, comprising two cattle population cycles.

Over the period as a whole, of course, there was a general upward drift in cattle prices, mainly due to general inflation and an increasing demand for beef. The various prices for all classes and grades of cattle averaged higher over the 1945-57 cycle than over the 1934-45 cycle. This, in effect, is what has already been shown in summary form in Table 5. During the 1945-57 cycle, prices rose to a peak in 1951.

Regional comparisons among cattle prices reveal two things - the one expected, the other, perhaps, unexpected. First, beef cattle prices in the deficit area, Ontario and Quebec, have generally been higher than in the surplus Prairie area. For purposes of illustration, Montreal, Toronto, Winnipeg and Calgary prices of Medium steers (less than 1,000 pounds) and Medium heifers were averaged over the years 1945-57. These results are shown in Table 8.

TABLE 8. COMPARISON OF PRICES ON PUBLIC STOCKYARDS IN MONTREAL, TORONTO, WINNIPEG AND CALGARY FOR MEDIUM STEERS AND HEIFERS, AVERAGES OF YEARS 1945-57.

(\$/cwt.)

	Montreal	Toronto	Winnipeg	Calgary
Medium Steers (up to 1,000 lb.)	18.45	18.52	16.79	17.63
Medium Heifers	16.65	17.76	14.73	16.08

Source: Adapted from Canada Department of Agriculture Livestock Market Reports, Ottawa, annual.

Secondly, regional comparisons among cattle prices for the main fresh beef grades reveal contrasting long-run trends. Comparisons were made by grade for Choice, Good, Medium and Common steers and heifers. Again, Montreal, Toronto, Winnipeg and Calgary were chosen for illustrative purposes. In order to facilitate comparison, the prices over the 1934-57 period were converted to indexes based on the 1949 price equal to 100.

Comparing the last two cattle cycles as a whole, it was found that only for Toronto did prices for the Choice and Good grades tend to rise fastest. For Montreal, the prices of Medium steers and heifers rose fastest. In Calgary, the prices of Common steers rose fastest.

One can also consider the changes that have taken place in the

retail prices of various grades of beef. Unfortunately, data were available for the calculation of retail price indexes for certain cuts of beef only. Prices of hamburg, blade roast, stewing beef, rolled rib roast, round steak and sirloin steak are available for Canada. Unpublished prices of these cuts, excepting hamburg, are available for a dozen cities. The limited number of cuts made a full comparison with the findings on the long-run behaviour of beef cattle prices impossible. Nevertheless, since the retail prices have a bearing upon the farm-retail price spread calculations, which follow in a later section, they are presented here in Table 9 for Canada for the years 1949 to 1958.

Table 9 shows how prices of these six cuts of beef rank at retail - hamburg, blade roast, stewing beef, rolled rib roast, round steak and sirloin steak in ascending order. Also clearly shown is that prices reached a cyclical peak in 1951. Beef prices fell after 1951 up to 1954, but since then resumed their upward trend until 1958, when they began another cyclical upswing. The indexes of prices in Table 9 for Canada, indicate that, although sirloin steak prices did not rise exceptionally fast up to 1951, for the whole period sirloin steak prices have risen faster than for the other five cuts. Hamburg prices, on the other hand, rose exceptionally fast to 1951, but since 1954 hamburg prices have risen more slowly than for most of the other cuts.¹ The prices of blade roast and stewing beef, other less-expensive cuts, also rose relatively rapidly to 1951.

To sum up, during years when beef prices are rising rapidly in a cyclical upswing, the prices of the less-expensive cuts rise fastest. In other words, the price differential between the more- and less-expensive cuts narrows during an upswing in beef prices. During a cyclical downswing in beef prices, the price differential between the more- and less-expensive cuts widens. It will be shown in a later section that the farmer's share of the retail price of beef increased from 1949 to 1951 and subsequently decreased, at least to 1957. The implications of the present conclusion are that from 1949 to 1951 the farmer's share of the retail beef price increased fastest for the more-expensive cuts, and that subsequently up to 1957, the farmer's share decreased fastest for these more-expensive cuts.

7. The Price Spread Between Feeder and Slaughter Cattle

It is time now to consider certain successive marketing stages or components of the farm-retail price spread for beef. Although

¹ The Ontario Government Brief to the Commission also drew attention to "...the differential in retail prices widening between the higher and lower cuts in recent years". Submission of the Government of Ontario to the Royal Commission on Price Spreads of Food Products, Proceedings, p. 2660.

TABLE 9. COMPARISON OF RETAIL PRICES AND PRICE INDEXES OF SIX CUTS OF BEEF,
CANADA, 1949 TO 1958

Year	Hamburg (¢/lb.) (Index)	Blade Roast (¢/lb.) (Index)	Stewing Beef (¢/lb.) (Index)	Rolled			Round Steak (¢/lb.) (Index)	Sirloin Steak (¢/lb.) (Index)	
				Rib Roast (¢/lb.) (Index)					
Canada									
1949	37.9	100.0	46.6	100.0	67.1	100.0	67.0	70.4	100.0
1950	47.1	124.3	55.8	119.6	78.0	116.2	78.6	82.8	117.6
1951	67.6	178.3	72.4	155.3	94.3	140.5	95.8	101.0	143.5
1952	57.7	152.4	66.5	142.6	87.4	130.3	89.3	93.4	132.7
1953	43.8	115.7	53.7	115.2	75.1	111.9	75.1	79.6	113.0
1954	38.7	102.2	49.1	105.2	71.3	106.2	71.9	77.0	109.4
1955	38.0	100.3	49.3	105.8	72.2	107.6	73.6	80.0	113.6
1956	37.1	97.9	49.5	106.2	73.2	109.2	75.2	81.6	115.9
1957	37.9	100.2	52.6	112.7	75.9	113.1	77.9	84.3	119.7
1958	46.4	122.5	61.3	131.6	84.8	126.3	87.9	94.4	134.1

Source: Dominion Bureau of Statistics.

the beef price spread normally refers to the gross margin between the farm price of slaughter cattle and the retail price of fresh beef, the margin between feeder and slaughter cattle prices is the appropriate preliminary stage at which to begin a general consideration of the successive marketing components of the beef price spread.

In marketing beef cattle, the first commercial step really begins with the sale of grass-fed feeder cattle for finishing, i.e., grain feeding for fattening. Of course, some cattle feeders raise some or all of their own feeders. Although it cannot be overlooked that a large supply of beef in Canada still comes from dairy-type cattle and from retired dairy cows, this is less true of fresh beef which is our main concern here.

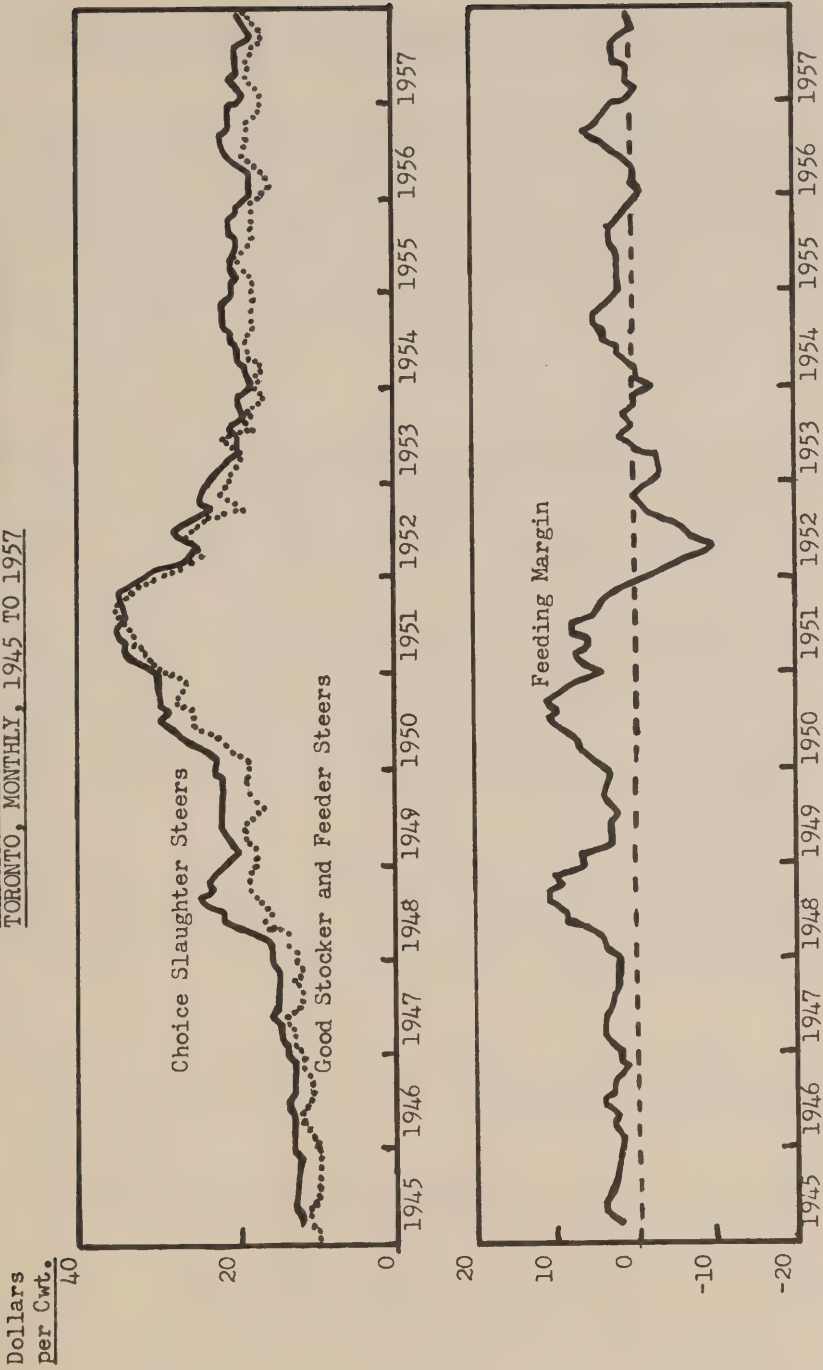
The producers of feeder cattle may sell them as calves, yearlings or heavy steers. Grazing conditions, feed grain prices, the expected price for slaughter cattle and also change in weight of animal are the major factors to be taken into consideration in deciding at what age to sell feeder cattle and how long to feed them.¹ Heavy steers may only need a few months on feed, but feeder calves may require up to a year. The finished cattle are sold for slaughtering through the same channels as feeder cattle, and incur similar expenses. The cost incurred by the farmer in transporting his cattle to the stockyards would make up the major part of the difference between a farm-gate price and the stockyard price. The transportation cost includes weight, shrinkage in transit, as well as direct shipping costs by road or rail. At the stockyards, there are the selling (or buying) commission and the yardage, feed, bedding etc. charges to be paid.

Since a large number of both feeder and slaughter cattle are sold through the Toronto stockyards, it was decided to use this market to illustrate the relationship between feeder and slaughter prices over the last cattle cycle, 1945-57. For this purpose, monthly comparisons were made between the prices of Choice slaughter steers (weighing up to 1,000 pounds) and the prices seven months earlier of good stocker and feeder steers. Seven months was assumed to be the average duration of the feeding period. Admittedly, this is rather too inflexible an assumption, but information was not available for introducing a more appropriate, variable time lag. The results are depicted in Chart 2.

In Chart 2 the long-run upward drift in cattle prices, already referred to, is clearly revealed, as well as the pronounced cyclical upswing in prices in the middle of the 1945-57 period. During the upswing of cattle prices (years 1948-51), the feeding margin was widest. The wide negative feeding margin during 1952 was mainly due to the foot-and-mouth epidemic. If 1952 is omitted, the feeding margin is still quite variable. In 1948, for example, it rose from about \$2.00 per cwt. in January to over \$11.00 in August and September, and then receded to nearly \$7.00 in December. In 1951, the feeding margin averaged over \$5.00 per cwt. In 1953, the feeding margin was negative. In 1955, the feeding

¹ Beef Marketing Margins and Costs, U.S.D.A., Agricultural Marketing Service, Misc. Pub. 710, Washington 1956, p. 7.

CHART 2. FEEDER AND SLAUGHTER CATTLE PRICES AND FEEDING MARGIN,
TORONTO, MONTHLY, 1945 TO 1957



margin averaged about \$2.00.

8. The Price Spread Between Slaughter Cattle and Beef Carcasses at Wholesale

After feeder cattle are finished on grain and sold as slaughter cattle, the next steps in marketing are slaughtering the animals, dressing, and then wholesaling the carcass beef. It is usually assumed that 100 pounds of live cattle yields 53 pounds of warm carcass beef or 51 pounds of chilled carcass (head, feet and hide off, kidney out).¹ The shrinkage from warm to cold dressed weight is reckoned at 3%, plus $4\frac{1}{2}$ pounds per carcass for head meat. The expected wholesale value of the dressed carcass, plus the value of by-products (hides, tallow, bones, oleo oil, casings, liver, heart, tongue, head meat etc.), in relation to costs of processing, largely determine what price the meat packer is prepared to pay for the live animal. Actually, of course,

"The dressing percentage will vary materially, even within the same grade of livestock, depending on whether the animals have been weighed 'fed and watered' or empty; as between animals shipped or trucked long distances as compared to short hauls; as between those heavily coated with manure and clean cattle and as between dry animals and those soaked by heavy rains.

Likewise, dressing percentages usually vary with the grade of the animals, as well as within any one grade. For instance, Choice and Good steers may yield from 52 per cent to 60 per cent of the live weights; Medium steers from 48 per cent to 54 per cent and Plain steers still lower; heifers usually average, grade for grade, slightly lower yields than steers; canner and cutter cows and steers may yield as low as 40 per cent to 45 per cent."²

Beef price spread calculations in the United States are based on an average carcass yield (Choice grade) of 58% of live weight and a retail yield of 80% of carcass weight.³ (The 20% waste on carcass weight is composed of fat, bones, shrinkage etc.) These yields amount to 46.3 pounds of retail cuts from 100 pounds of live weight, or a live weight that is 2.16 times the retail weight.

It is interesting to note that the dressed weight of beef cattle in Canada has been increasing over the last 25 years, from an average of about 477 pounds per carcass over the 1935-45 cycle to about 493 pounds over the 1945-57 cycle. The weight of dressed carcasses

1 Canada Department of Agriculture, Canada Weights, Measures and Conversion Factors for Agricultural Products, Ottawa 1954, p. 6.

2 Quotation from A Letter on Canadian Livestock Products, Meat Packers Council of Canada, Toronto, Nov.-Dec. 1958, p. 4.

3 Farm-Retail Spreads for Food Products, U.S.D.A., Agricultural Marketing Service, Misc. Pub. 741, Washington 1957, pp. 19, 77 and 103.

also increased during the last 13 years.¹ Comparison of live and cold dressed weights over the last 17 years suggests a slight upward trend in live-to-dressed yields, from a yield of about 51.7% during the upward phase of the previous cattle numbers cycle, to a yield of 52.6% during the upward phase of the last cattle cycle. The explanation for this might be the increasing proportion of beef-type cattle used for beef, and the improvements in animal nutrition. There was also a more substantial cyclical increase in yield within the last cattle numbers cycle with the yields during the downward phase (first half) of the cycle being lower than during the upward phase (latter half) of the cycle. Although carcass weights increased over the cycle, the live weights were greater during the first half than during the latter half. As far as the Commission's decade of study is concerned, the yields for the first two years, 1949 and 1950, averaged about 49.9% in contrast with the seven years, 1951 to 1957, when the yields averaged about 52.5%.

Wholesale prices are available only for Commercial quality steer carcasses for eight major cities and not for Canada as a whole. In order to illustrate the price spread between slaughter cattle and beef carcasses at wholesale, Toronto and Winnipeg markets were selected. Several rather arbitrary assumptions then had to be made. The grade of live slaughter cattle selected as being most comparable² to Commercial steer carcasses for illustrative purposes, was Low-Medium steers of up to 1,000 pounds in weight. Of course, Low-Medium steers of over 1,000 pounds also are comparable, and perhaps some Good and Common steers. The price of Low-Medium light steers was estimated by computing the lower third of the price range for Medium light steers. An average conversion factor of 50% from live to dressed carcass weight was applied, but with year-to-year variations in accordance with variations in the Canada average yield for all grades. An adjustment for the value of by-products was made by deducting from the live value an allowance for by-products. The slaughter-wholesale spreads derived are shown in Table 10. In view of the arbitrary assumptions made in this estimation, the accuracy of the results is questionable. The relative changes from year to year in the live-to-wholesale spread shown in Table 10 should be more reliable. The live-to-wholesale spread (corresponds closely to the meat packer's margin) appears during the last decade to have been widest in the year 1954, and narrowest in 1949. Further study of the live-to-wholesale beef price spread is also needed as a preliminary step before proceeding to estimate a wholesale-retail spread.

Retailers usually buy their beef in carcass form from meat packers or wholesalers. The retailer then trims off excess fat, bones, some cuts for roasts and stew beef, and grinds some beef into hamburger.

A U.S. study of the live-wholesale spread on Choice grade cattle for 1949-55 yielded the results shown in Table 11. The U.S. margins were more uniform from year to year and, in general, narrower than

1 Beef cattle in the United States have been fed to heavier weights since the end of World War II. See The Livestock and Meat Situation, U.S.D.A., Agricultural Marketing Service, Washington, Nov. 1958, p. 2.

2 And most frequent.

TABLE 10. ESTIMATES OF PRICE SPREAD BETWEEN LOW-MEDIUM SLAUGHTER STEERS^a AND COMMERCIAL CARCASSES AT WHOLESALE, TORONTO AND WINNIPEG, 1949-57.

Year	Wholesale	Equivalent	Estimated	Estimated	Live Value	Live-
	Carcass	Carcass	Live	Live	Less	Wholesale
	Value	Value of	Value	Value of	By-Products	Spread
	(¢/lb.)	1 lb. Live ^b	(¢/lb.)	(¢/lb.)	(¢/lb.)	(¢/lb. Live)
<u>Toronto</u>						
1949	38	18.1	18.5	2.1	16.4	1.7
1950	47	22.7	22.2	2.7	19.5	3.2
1951	56	28.3	29.8	3.5	26.3	2.0
1952	47	23.9	22.5	2.1	20.4	3.5
1953	36	18.3	17.7	1.9	15.8	2.5
1954	34	17.0	15.2	1.9	13.3	3.7
1955	35	17.5	16.7	1.9	14.8	2.7
1956	34	17.3	17.2	1.8	15.4	1.9
1957	33	17.0	16.0	1.9	14.1	2.9
<u>Winnipeg</u>						
1949	36	17.2	17.2	2.1	15.1	2.1
1950	44	21.3	20.7	2.7	18.0	1.3
1951	55	27.8	27.5	3.5	24.0	3.8
1952	47	23.9	21.3	2.1	19.2	4.7
1953	37	18.8	15.3	1.9	13.4	5.4
1954	36	18.0	14.5	1.9	12.6	5.4
1955	36	18.0	15.7	1.9	13.8	4.2
1956	31	15.8	15.2	1.8	13.4	2.4
1957	31	15.9	14.8	1.9	12.9	3.0

a Lower third of price range for Medium slaughter steers, up to 1,000 pounds, public stockyards.

b Based on assumption of 50% average yield, varying from year to year in accordance with variations in the Canada average yield for all grades.

Source: D.B.S., Quarterly Bulletin of Agricultural Statistics, Ottawa. Canada Department of Agriculture Livestock Market Review, Ottawa, annual.

TABLE 11. U.S. LIVE-TO-WHOLESALE MARKETING MARGINS,
CENTS PER POUND OF LIVE WEIGHT, CHOICE
GRADE CATTLE, 1949-55.

1949	1950	1951	1952	1953	1954	1955
2.5	2.1	2.4	2.5	2.9	2.6	2.6

Source: Beef Marketing Margins and Costs, U.S.D.A., Agricultural Mar-
keting Service, Misc. Pub. 710, Washington 1956, pp. 10 and 11.

those derived above for Toronto and Winnipeg.

9. Estimation of Farm-Retail Spread for Beef

In estimating the farm-retail price spread for beef, the basis used was one pound of live beef cattle sold by the farmer.

In estimating the retail value equivalent of one pound of Good live steer, an average live-retail yield of 46% was used. This was arrived at by assuming an average live-to-dressed yield of 56%, and an average dressed-to-retail yield of 82.25%, which amounts to an average live weight 2.17 times as great as the equivalent retail weight. In other words, the retail price per pound must average more than double the live weight price per pound in order to cover the payment to the farmer before taking any marketing expenses into account. The 56% live-to-dressed yield was an average for the decade of study, 1949 to 1958, and the actual figure used from year to year varied in accordance with variations in the Canada average yield for all grades.

Canada retail prices are available for the decade of study for six retail cuts of beef only. A careful scrutiny was made of available information on beef cut-out tests at retail in order to derive annual weights for prices of the six cuts in arriving at a composite yearly retail price for beef in Canada. The retail price of each of the six cuts was weighted by the estimated proportion of the carcass cut into related price groups of cuts. The cut-out tests called for declining weights for the higher-priced cuts and increasing weights for the lower-priced cuts. The tests also called for an increasing proportion of waste trimmed out at retail (bones, suet etc.) The significance of this kind of adjustment can be appreciated when one realizes that prices for the different cuts vary from over one dollar per pound for prime cuts, at one extreme, to one-hundredth of a cent per pound for waste fat and bones, at the other extreme. The results are summarized in Table 12.

The basis for our farm price was the stockyard price of Good steers. In order to arrive at a farm-gate price, stockyard and transportation charges were subtracted and an allowance for by-products was made. We examined the available data on live-to-cold dressed yield, and found that this increased somewhat over the period of study, both in Canada and the United States. On the other hand, the proportion of waste trimmed out at retail evidently increased during the decade. Both

TABLE 12. ESTIMATED VARIATIONS IN BEEF CUT-OUTS AT RETAIL,
BY SEVEN MAJOR RELATED PRICE GROUPS OF CUTS,
CANADA, 1949 AND 1958.

Price Group and Included Cuts	Per Cent of Carcass Weight	
	1949	1958
Sirloin (sirloin steak, tip, T-bone, porterhouse)	15.00	14.00
Round Steak (round, rump)	16.50	13.50
Rib Roast (standing rib, rib roast, 5-6-7 rib, inside and outside roll, wing steak or roast)	11.50	8.00
Blade Roast (blade roast, cross rib roast, chuck, shoulder roast, round bone)	16.50	16.50
Stewing (stewing beef, flank, short or braising ribs, boneless neck)	7.50	8.50
Hamburg (shank hind, centre, front and knuckle, brisket point and plate, short, hamburg)	17.00	20.00
Waste (fat, bone, shrinkage, waste)	16.00	19.50
TOTAL	100.00	100.00

of these factors were taken into account on an annual basis in calculating the farm-retail spread. The net effect of the two factors upon the farm-retail spread and farmer's share of the retail price was small because the effects of the two factors tend to be offsetting.

Table 13 shows how retail and farm prices for beef rose rapidly from 1949 to a peak in 1951, and then fell rapidly to 1953, tapered off for about three years thereafter, and then, in 1957 began climbing again for another cyclical upswing. The farm-retail spread on beef widened rapidly from a minimum in 1949 to a maximum in 1952, and then fell to 1955, after which it began widening again. The explanation for the widening spread seems to be both in additional services and in increased costs of marketing livestock and of processing and retailing

TABLE 13. SUMMARY OF FARM-RETAIL SPREADS ON BEEF, CANADA, 1949 TO 1958

Calendar Year	Retail Price ^a (¢/lb.)	Retail Equivalent Value of 1 lb. Live (¢)	Farm Price ^c (¢/lb.)	By-Product Value (¢/lb. Live)	Farm Price		Farm-Retail Spread (¢/lb. Live)	Farmer's Share of Retail Value (%)
					Less By-Products			
1949	56.9	25.4	19.8	2.4	17.4	8.0	68.5	
1950	67.8	30.6	24.6	3.0	21.6	9.0	70.6	
1951	85.4	40.1	31.8	4.0	27.8	12.3	69.3	
1952	76.5	35.9	23.9	2.1	21.8	14.1	60.7	
1953	62.1	29.0	18.4	1.9	16.5	12.5	56.9	
1954	58.2	26.6	17.7	1.9	15.8	10.8	59.4	
1955	58.9	26.8	18.1	1.9	16.2	10.6	60.4	
1956	59.2	27.3	17.5	1.8	15.7	11.6	57.5	
1957	61.2	28.4	17.2	1.9	15.3	13.1	53.9	
1958	70.2	32.4	21.2	2.1	19.1	13.3	59.0	

a Canada retail prices of each of six cuts weighted annually by estimated proportion of carcass cut into related price groups of cuts.

b Based on annually variable live-to-dressed yield averaging 56% over the decade, and waste at retail increasing from 16% in 1949 to 19.5% in 1958.

c Prices of Good steers on 11 public stockyards weighted regionally by marketings minus transport and stockyard charges.

beef. There have undoubtedly been improvements in efficiency in meat distribution and processing during the last decade, but these have not been sufficient to offset the rising costs of materials, labour, transport etc., and of additional services such as pre-processing and pre-packaging.

10. Comparison with United States Estimates

The Canadian farmer's share of the retail value of beef is compared with that of the U.S. farmer in Table 14. The Canadian farmer's share was smaller throughout the decade of study. Also included in Table 14, for the sake of comparison, is the Manitoba farmer's share calculated in a special study referred to in the following section.

11. Special Manitoba Study

A study of the farm-retail price spread on beef in Manitoba was made in 1958 by Professor A.W. Wood of the University of Manitoba.¹ The study was limited to Medium quality steers and heifers marketed from Manitoba farms through the Union Stockyards at St. Boniface, processed in Manitoba plants, and sold at retail in Winnipeg. The time period covered was from 1935 to 1957. Fixed conversion factors used were 52% yield from live to carcass and 87% yield from carcass to retail.

Professor Wood reached several interesting conclusions in his Manitoba study:² (1) beef prices rose steadily after 1935, reached a peak in 1951, declined until 1954, and have since been relatively stable; (2) both the farm price and the market margin increased substantially during the 1935-57 period; (3) prices at all levels of the market have a strong tendency to rise and fall together; (4) the price received by packers deviated from this pattern on three occasions, being out of line on the high side in 1937 and 1948, and on the low side from 1955 to 1957; (5) when expressed in real terms (constant dollars), the whole increase in the margin over the period has occurred at the retail level;³ (6) the farmer's share varied widely, from one-third to two-thirds of the Winnipeg consumer's beef dollar - the share was highest when prices were at their peak and lowest when prices were low; (7) a large part of the variation in the farm share of the consumer's beef dollar is a result of variations in the price of beef cattle, while marketing charges remain relatively stable.

1 A.W. Wood, Market Margins for Beef in Manitoba 1935-1957, Department of Agricultural Economics and Farm Management, University of Manitoba, Winnipeg, 1958.

2 Wood op. cit., pp. 49-61.

3 The Ontario Government Brief already cited also concluded that the immediate source of the widening price spread on beef "...is the tendency for the retail margin over the wholesale price to increase", and that "...the role of processing in the widening of the price spread must be regarded as secondary to the role of retail services", Proceedings, p. 2661.

TABLE 14. COMPARISON OF FARMER'S SHARE OF RETAIL VALUE OF BEEF, UNITED STATES, CANADA AND MANITOBA, 1949-58

Year	U.S. Choice Grade ^a (%)	Canada Good Grade ^b (%)	Manitoba Medium Grade ^c (%)
1949	70	69	63
1950	72	71	63
1951	75	69	67
1952	72	61	56
1953	63	57	50
1954	65	59	51
1955	63	60	53
1956	60	58	51
1957	60	54	52
1958	62	59	n.a.

a Source: U.S.D.A., Farm-Retail Spreads for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington 1957, p. 103, and The Marketing and Transportation Situation, Washington, Jan. 1958, pp. 46 and 47.

b Source: This study, Table 13.

c Medium steers and heifers.

Source: A.W. Wood, Market Margins for Beef in Manitoba 1935-1957, Department of Agricultural Economics and Farm Management, University of Manitoba, Winnipeg, 1958, p. 54.

PORK

Price Spreads on Pork Produced and Sold in Canada
and the Main Marketing Influences Thereon

1. Brief Description of the Assembly of Hogs and Sales Agencies
at the First Point of Sale

Hogs are usually shipped alive from the farm directly to packing plants or public stockyards or, as feeder hogs, to community auctions. Over the period of study, about 87% of the hogs marketed in Canada were delivered directly to packing plants and about 13% went through public stockyards. Shipping costs are met by the farmer, as are selling fees, transit insurance and shrinkage.

At the end of 1958 there were 11 public stockyards in Canada, two in Montreal and one in each of the following cities: Toronto, Winnipeg, Regina, Moose Jaw, Prince Albert, Calgary, Edmonton, Lethbridge and Vancouver. The stockyards at Toronto, Winnipeg and Calgary handle the largest volume of hogs delivered to the public stockyards.

There is no public stockyard in the Maritime Provinces. In Nova Scotia and New Brunswick hogs are sold through Maritime Co-operative Services, a co-operative selling agency located at Moncton, New Brunswick. During the period covered by this study, it has become the custom of the buyer of hogs to pay the price officially quoted from the Montreal stockyards.

In Quebec, commission firms handle the majority of hogs sold in the public stockyards. The Cooperative Federee de Quebec has three of its own plants for slaughtering members' hogs.

All hogs in Ontario are marketed through the Ontario Hog Producers' Co-operative. Some hogs go through the public stockyards, but a large volume is sold through what is known as "assembly" yards, of which there are a total of 20 in the province. The hogs are sold from these yards on an f.o.b. basis. The producer pays the transportation cost to these yards.

In the Prairie Provinces, the Canadian Livestock Co-operative Limited, the Livestock Division of the Saskatchewan Wheat Pool, and the Alberta Livestock Co-operative, handle a large percentage of the hogs. Nearly all these sales are made on an f.o.b. basis.

The Province of British Columbia no longer has a public stockyard, as the one that had been in operation over the period closed on June 6, 1959. Most of the hogs in British Columbia go directly to packing plants. The greater part of the province's hog supplies come from Alberta.

Federally-inspected and approved packing plants are located in

all the provinces across Canada. Of the 125 plants that were in operation at the beginning of 1959, 51 were located in Quebec, 40 in Ontario, 22 in the Prairies, 7 in British Columbia and 5 in the Maritimes.

The Canada Department of Agriculture, Health of Animals Division, provides a meat inspection service at each plant under federal inspection. All meat and meat products for human consumption are marked, indicating that the product has met federal health requirements. There is no charge for this service. Approved plants are not provided with federal health of animal service, although some of these plants have provincial or municipal health inspection.

The Canada Department of Agriculture, Livestock Division, provides a hog grading service. Graders are available at each plant under federal inspection. A grading service is also available at approved plants, not under federal inspection, that kill a minimum of 50 hogs per week. The Department does not charge for this grading service.

Over the years 1949 to 1958, the proportion of hogs slaughtered in federally-inspected or approved plants increased to where it was close to 80% of total hog slaughterings.

2. Grading of Hog Carcasses

Between 1935 and 1940 there was an optional system of grading in effect, whereby the producer could have his hogs graded alive or on a carcass basis. Since October, 1940, all hogs entering provincial or export trade must be graded according to Canadian standards. There are 14 official grades for hog carcasses and these are as follows: A; B₁; B₂; B₃; C; D; Light; Heavy; Extra Heavy; Physical Injury; Ridgling; Stags; Sows 1; and Sows 2.

The proportion of A, B₁ and C hog carcasses of the total hog gradings in federally-inspected and approved plants is shown in Table 1. Over the 10-year period, the average proportion of hogs grading "A" was approximately 29% of total hog gradings, and those grading "B₁", 42% of the total. These two top grades together averaged 71%. Table 1 shows also that over the decade there has been a relative decline in the top quality hogs with simultaneous increase of Grade C hogs. The proportion of these three grades, taken together, did not change and averaged about 80%.

3. Price Differentials Between Grades

Hog carcasses are bought by grade on a weight basis, with the quoted price issued daily for each of the public stockyards in Canada. The highest price is paid for "A" grade carcasses weighing from 140-170 pounds. Preferred live weights are from 190 to 200 pounds. Price differentials on Grades A, B₁, B₂, B₃ and C are fairly standard and stable in the public stockyards across the country. Grade prices below C fluctuate considerably.

TABLE 1. GRADES A, B₁ AND C OF HOG CARCASSES GRADED
IN FEDERALLY-INSPECTED AND APPROVED PLANTS,
AS PER CENT OF TOTAL GRADINGS, CANADA,
1949 TO 1958.

Year	A	B ₁	C	Total Hogs Graded
	(per cent)			(thousands)
1949	31.1	43.9	4.5	4,429
1950	32.2	43.3	4.2	4,776
1951	31.3	41.8	4.6	4,895
1952	28.5	41.2	6.5	6,699
1953	27.3	43.1	7.8	5,003
1954	26.0	44.0	9.1	5,079
1955	27.1	42.3	9.6	5,917
1956	28.5	41.4	9.7	5,960
1957	28.7	41.6	9.9	5,400
1958	28.7	41.2	9.8	6,459

Source: Canada Department of Agriculture, Livestock Market Review,
Ottawa, Annual.

4. Hog Premiums

Beginning January 24, 1944, the Canadian Government paid a premium to hog producers of \$3.00 per hog on Grade A and \$2.00 per hog on Grade B₁. On April 1, 1946, these premiums were reduced to \$2.00 per head on Grade A and \$1.00 on Grade B₁. Hog premiums are paid to the producer by the Government after verification of the individual producer's gradings.

5. Geographical Distribution of Hog Marketings

Hog marketings handled by federally-approved and inspected plants, are shown by province of origin in Table 2. Hogs are produced and marketed in all the provinces of Canada, with the Province of Ontario having the largest production, followed by Alberta and Quebec. Over the period studied Ontario, Alberta and Quebec together produced 81.5% of Canadian production. Manitoba and Saskatchewan produced 15.0%, followed by the Maritime Provinces with 2.8%, and British Columbia with 0.7%. The eastern provinces produced 59.4% of Canadian production, with the western provinces producing 40.6%. The Prairie Provinces with 18% of the population produced 40% of the hogs. Surplus live hogs and pork from the Prairies are shipped to deficit areas in central and eastern Canada and British Columbia.

6. Interprovincial Movement of Hogs

The net interprovincial movement of live hogs is summarized in Table 3. There is a large movement of hogs from Ontario into Quebec,

TABLE 2. DISTRIBUTION OF HOG MARKETINGS, BY PROVINCES, CANADA, 1949 TO 1958

(Thousand Carcasses)

Provinces	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	10-Year Average
Maritimes	158	190	219	219	137	144	138	125	118	133	155
Quebec	846	1,015	1,497	810	810	900	1,057	1,060	937	1,129	1,031
Ontario	1,928	2,028	2,589	1,844	1,844	1,786	1,995	2,196	2,017	2,184	2,061
Eastern Canada	2,932	3,233	4,305	2,791	2,791	2,830	3,190	3,381	3,072	3,446	3,247
Manitoba	260	266	451	451	321	335	437	388	332	464	355
Saskatchewan	280	280	537	537	420	421	562	577	535	704	464
Alberta	925	960	1,362	1,362	1,432	1,462	1,686	1,572	1,432	1,812	1,360
British Columbia	32	38	44	44	39	32	41	42	29	32	36
Western Canada	1,497	1,544	2,394	2,394	2,212	2,250	2,726	2,579	2,328	3,012	2,215
CANADA	4,429	4,777	6,699	6,699	5,003	5,080	5,916	5,960	5,400	6,458	5,462

Source: Canada Department of Agriculture, Livestock Market Review, Annual.

where they are slaughtered. A considerable volume of both fresh and processed pork cuts moves into the Maritimes from Quebec. There is, however, no reliable data available showing the size of this movement into the Maritimes.

Manitoba has a large inward movement of hogs, drawing from the other Prairie Provinces. Both Saskatchewan and Alberta have a large outward movement. The large inward movement into British Columbia, a deficit area, originates mainly in Alberta.

The seasons of heavier and lighter marketings are reflected in the interprovincial movement of hogs. The largest movement takes place during October-December, and the smallest during July-September.

TABLE 3. NET INTERPROVINCIAL MOVEMENT OF LIVE HOGS,
QUARTERLY, CANADA, 10-YEAR AVERAGES, 1949 TO 1958

(+) Inward Movement,
(-) Outward Movement

Provinces	January -March	April -June	July- September	October- December
(numbers)				
Maritimes	- 22	- 240	+ 72	- 185
Quebec	+ 50,978	+ 47,759	+ 39,603	+ 64,357
Ontario	- 46,551	- 42,573	- 35,092	- 58,345
Manitoba	+ 72,772	+ 58,432	+ 43,998	+ 93,865
Saskatchewan	- 53,223	- 38,789	- 29,833	- 70,819
Alberta	- 92,221	- 94,585	- 73,043	-105,924
British Columbia	+ 67,446	+ 69,956	+ 54,290	+ 76,928

Source: Canada Department of Agriculture, Livestock Market Review,
Ottawa, Annual.

7. The Storage of Pork

Storage is a very important stabilizing function in pork marketing. There is a considerable seasonal variation in production and, without a storage program, there would be much greater seasonal variation in prices, with prices tending to fall to a very low level during the seasons of heaviest hog marketings, i.e., during the fall months and first five months of the year. The distribution of pork storage and the quantity stored is outlined in Table 4. Storage stocks are built up over the period November to May, the months of heaviest production. Stocks are reduced during the summer when the marketings of hogs are lighter.

TABLE 4. PORK IN COLD STORAGE, PACKERS' AND WHOLESALE WAREHOUSES IN CANADA, BY PROVINCES, FIRST BUSINESS DAY OF THE MONTHS, FEBRUARY, MAY, AUGUST AND NOVEMBER, 10-YEAR AVERAGES, 1949 TO 1958.

(Thousand Pounds)

Provinces	February	May	August	November
Maritimes	1,184	2,165	1,661	1,169
Quebec	8,178	12,373	7,969	7,051
Ontario	10,493	14,739	11,685	8,837
Manitoba	5,236	5,997	3,998	2,631
Saskatchewan	3,086	3,668	2,634	1,307
Alberta	7,515	9,636	7,199	4,171
British Columbia	2,743	3,419	2,390	1,637
CANADA	38,435	51,997	37,546	26,803

Source: D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

A storage program is helpful in meeting peak demands for pork products. There are two periods during the year when there is a heavy consumption of pork, the Easter and Christmas-New Year periods. The supply of pork cuts is built up through storage stocks for what is known in the trade as the Christmas and the Easter "put-down".

The three provinces that produce over 80% of the hogs also hold the largest stocks in storage, with Ontario holding the largest, followed by Quebec and Alberta.

8. Price Support for Hogs

The Agricultural Prices Support Act received Royal assent on August 15, 1944, and an amendment made in 1950 made it continuous from April 1, 1950. This legislation was repealed and was succeeded by the Agricultural Stabilization Act, effective April 1, 1958. The first effective date for the support of pork products under the Agricultural Prices Support Act was on January 24, 1951. Purchases were made by the Board during the calendar year 1952, and the fiscal year 1958/59, starting in October of 1958.

During 1952 the United States placed an embargo on imports of Canadian hogs and pork due to an outbreak in Saskatchewan of foot-and-mouth disease. Hog prices dropped to the price support level of \$26.00 per 100 pounds, and the Agricultural Prices Support Board had to make heavy purchases to prevent prices dropping further. A large quantity of pork was preserved by canning.

From 1953 to 1958, at a support level of \$23.00, no purchases by the Board were required. In 1958, the support was raised to \$25.00.

In October, 1958, the Board again began support operations and became heavily committed in both fresh and canned pork. In October, 1959, the support level dropped to \$23.65.

9. The Hog-Barley Price Ratio and Gradings of Hog Carcasses

The effect of the hog-barley ratio, i.e., the number of bushels of No. 1 feed barley that are equal in value to 100 pounds of Grade B₁ live hog, including the federal hog quality premium, on the number of hogs slaughtered and graded in federally-inspected and approved plants is shown in Table 5. The relative prices of hogs and feed grain, as indicated by the hog-barley price ratio, has considerable influence on the contraction and expansion of hog production. Other factors, such as price support policy, farm cash income and the quantity of feed available on farms, also affect hog production. With a hog-barley ratio above average, production tends to be encouraged; while a ratio below average tends to discourage production. Hog-barley price relationships during the fall and spring breeding seasons affect the decisions of hog producers in planning their pig crops. On the average, about 12 months pass between the time when sows or gilts are bred and the time when the offspring are ready for market.

TABLE 5. HOG-BARLEY RATIO,^a AND TOTAL CARCASS GRADINGS,
SIX-MONTH AVERAGES, CANADA, 1949 TO 1958

Year	Hog-Barley Ratio		Total Carcasses	
	January-June	July-December	January-June	July-December
(thousands)				
1949	21.4	17.5	2,049	2,380
1950	16.0	17.3	2,529	2,247
1951	18.7	20.1	2,392	2,503
1952	16.0	15.6	3,191	3,508
1953	17.5	24.5	2,731	2,272
1954	29.7	17.9	2,460	2,619
1955	16.7	17.9	2,956	2,961
1956	15.9	20.9	3,212	2,748
1957	25.2	25.8	2,751	2,649
1958	26.0	21.0	2,996	3,462
10-Year Average	20.3	19.9	2,727	2,735

a The ratio is based on Winnipeg hog and barley prices.

Source: Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual.

The number of B₁ carcasses graded, together with the average

weighted prices for B₁ carcasses, are shown in Table 6 and Chart 1. Over the period studied, there appears to have been 2½ hog production cycles beginning from a low supply phase in 1949, rising to a peak in 1952, falling to a low phase by the end of 1953, rising to a peak in 1956, falling to another low phase at the end of 1957, and rising to a peak in 1959. During periods of higher production prices were down, and during periods of lower production prices were up. Historically, hog production and prices have been subject to cyclical variations averaging three to four years in duration.

TABLE 6. B₁ CARCASS GRADINGS AND B₁ CARCASS PRICES, SIX-MONTH AVERAGES, CANADA, 1949 TO 1958

Year	<u>B₁ Carcasses</u>		<u>B₁ Carcass Prices</u>	
	January-June	July-December	January-June	July-December
	(thousands)		(dollars per 100 lbs.)	
1949	878	1,013	30.2	29.2
1950	1,082	939	27.5	29.8
1951	991	997	33.6	31.4
1952	1,233	1,411	25.4	25.0
1953	1,159	964	27.5	32.0
1954	1,057	1,135	34.3	25.7
1955	1,244	1,220	23.8	22.9
1956	1,327	1,121	21.7	27.7
1957	1,163	1,050	27.9	28.2
1958	1,201	1,302	28.5	25.2
10-Year Average	1,134	1,115	27.7	27.4

Source: Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual.

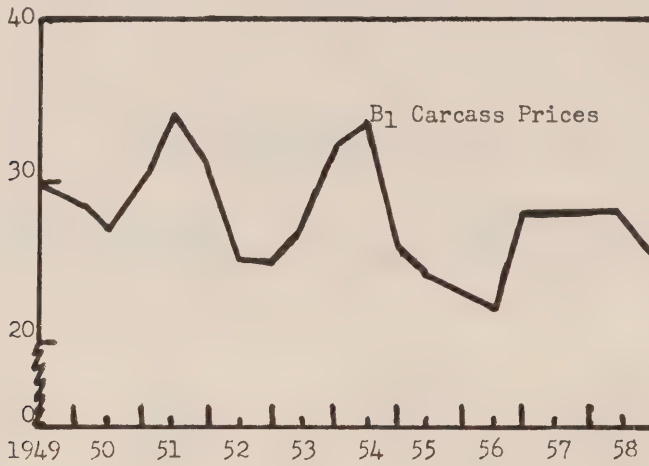
10. Seasonal Pattern of Production and Price Variability

Monthly indexes of hog marketings and carcass prices, based on 10-year averages, are shown in Table 7. Farrowings of pigs are concentrated in the spring and autumn. Over the period studied, the heaviest marketings of hogs occurred during the fall months, increasing to a peak in December. There were particularly heavy marketings in December of the price support years 1952 and 1958. A second season of heavy marketings normally comes during the spring months, reaching a secondary peak during the month of March with the marketing of the autumn pig crop. The month of March was the peak month in 1950, 1953 and 1956. A third and smaller peak occurred in June and was followed by a summer low in marketings.

Carcass prices tend to be inversely associated with changes in production - seasons of higher marketings usually were associated

CHART 1. B₁ CARCASS GRADINGS AND B₁ CARCASS PRICES,
SIX-MONTH AVERAGES, CANADA, 1949 TO 1958

Dollars per
100 lbs.



Million
Carcasses

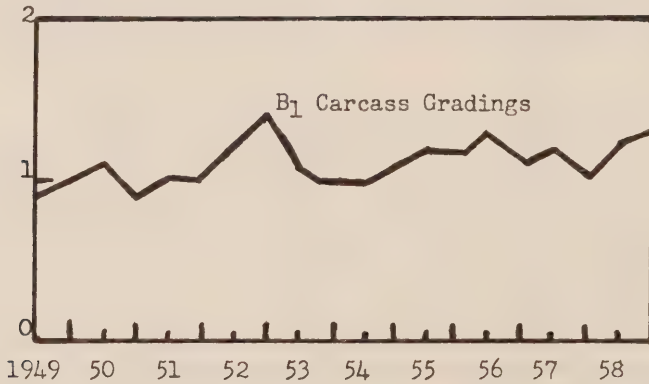


TABLE 7. SEASONAL PATTERN OF HOG MARKETINGS AND B₁ - HOG CARCASS PRICES, CANADA, 10-YEAR AVERAGES, 1949 TO 1958

(Average for 10 Years = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Hog Marketings ^a	92.1	92.1	117.3	97.2	93.8	105.5	75.4	73.7	100.5	98.8	115.6	137.4
B ₁ Carcass Prices	96.1	96.8	98.2	97.1	98.6	109.0	107.5	107.5	105.0	97.1	92.5	94.3

^a Adjusted for seasonal variations in carcass weights.

Source: Adapted from Department of Agriculture, Livestock Market Review, Ottawa, Annual.

with lower prices and seasons of lower marketings with higher prices. Seasonal price changes, however, were not as marked as seasonal changes in marketings. The 10-year average shows that B1 carcass prices fluctuated about 10% above or below the annual average price, whereas hog marketings showed considerable variations, going up to about 37% above the annual average and 26% below the average.

11. Imports, Exports and Stocks of Pork

The quantities of pork imported, exported and stocks on hand at January 1 for each of the years 1949 to 1958 are shown in Table 8.

TABLE 8. IMPORTS, EXPORTS AND STOCKS OF PORK ON JANUARY 1, CANADA, 1949 TO 1958

Year	Imports ^a	Exports ^a	Stocks on Hand, January 1 ^b
(thousand pounds)			
1949	5,734	83,422	32,439
1950	6,005	92,302	35,445
1951	22,761	31,933	31,292
1952	4,836	30,502	39,000
1953	461	75,539	68,813
1954	1,499	74,958	30,752
1955	120	78,819	34,466
1956	114	66,688	36,626
1957	1,467	42,402	21,866
1958	1,657	68,148	25,287

a Basis dressed carcass.

b Total of fresh, frozen, cured and in-cure, and offal (frozen).

Source: D.B.S., Trade of Canada, Ottawa, Annual; D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

Over the period reviewed, there were only small imports of pork, with the exception of the year 1951, when imports were 3.5% of pork production. Otherwise, imports as a per cent of production varied from .01% to 1%.

During the years previous to the period studied, the main export market for Canadian pork was the United Kingdom. Over the last 10 years, however, a considerable volume of pork, ranging from 3.5% of pork production in 1952, to 14.8% in 1950, moved to the United States. The years 1949 and 1950, with Canada-United Kingdom contracts in force, showed the largest exports of the period. Exports dropped drastically

in 1951 and remained at approximately the same level in 1952. The year 1951 saw the completion of United Kingdom pork contracts, and 1952 was the year of the United States embargo on Canadian pork products because of foot-and-mouth disease in Canada. Exports more than doubled in 1953, as there was a considerable export of canned pork to the United States during the first six months of that year. Exports remained at this higher level for the year 1954 and showed a further increase in 1955. In 1956 and 1957 pork exports decreased significantly because during these two years production was low and prices remained at a relatively high level. With heavy production of pork during the fall of 1958, and prices at the support level, exports of pork for 1958 showed an increase of over 28 million pounds over the previous year.

There is a good market in the United States for some Canadian pork products, such as hams and backs (loins), bacon and sides, which go into what is known as a "premium" market. The larger part of our pork exports is in these cuts. When the general price levels of hog carcasses are about the same in both countries, the wholesale price of Canadian hams and backs is considerably higher in the United States than in Canada. Whenever there is a surplus of hogs in Canada, Canadian prices drop near to, or to the equivalent, of United States prices. During these periods a large part of our surplus pork is normally exported to the United States.

12. Domestic Supply and Utilization

The quantities of pork, from hogs slaughtered in federally-inspected and approved plants and available for domestic utilization, are presented in Table 9. It should be noted that, except for pork canned under the Agricultural Prices Support Board in 1952 and 1953, the quantity of pork canned by the trade is included in the figures for domestic utilization. Although there have been considerable year-to-year variations in the quantities available for domestic utilization and the per capita consumption, the trend has been definitely upward.

13. Estimation of the Farm-Retail Price Spread for Pork, Calendar Years, Canada, 1949 to 1958

Retail prices for five major pork cuts were used in the estimation of the composite retail carcass price for pork. Of the five cuts used, two are retailed fresh as loin centre cut chops and Boston butt and three are sold processed as ham (bone removed), side bacon (sliced and rindless) and cottage roll (a shoulder cut). These cuts represent the four major areas of the hog carcass, namely, the ham, loin, belly and shoulder. The cuts chosen from these areas are the ones sold at retail in the greatest volume, and represent approximately 68% of the carcass. The retail prices for the five cuts were weighted by the percentage of the total carcass weight accounted by each cut. An allowance was made for the minor cuts, such as spare ribs and hocks, and an adjustment was made to the average weighted price of the retail cuts.

The prices for B1 carcasses on 11 public stockyards were weighted regionally by the number of B1 hogs graded. An allowance was

TABLE 9. PORK: SUPPLY AND DISPOSITION,
CANADA, 1949 TO 1958

Year	Total of Production, Imports and Stocks on Hand, Jan. 1	Total of Exports and Stocks on Hand, Dec. 31	Inspected Quantities Available for Domestic Utilization ^a	Per Capita Utilization ^b
	(million pounds)		(pounds)	
1949	623.9	118.9	505.0	37.6
1950	664.0	123.6	540.4	39.4
1951	696.9	70.9	626.0	44.7
1952	777.1 ^c	99.3	677.8	46.9
1953	711.3 ^c	106.3	605.0	40.8
1954	697.6	109.4	588.2	38.5
1955	801.8	115.4	686.4	43.7
1956	812.1	88.5	723.6	45.0
1957	733.6	67.7	665.9	40.1
1958	878.7	115.1	763.6	44.8
10-Year Average	739.7	101.5	638.2	42.2

a Total supply minus exports and stocks on hand, December 31.

b It includes only quantities of pork marketed through federally-inspected or approved plants.

c Adjusted to exclude the amount of pork put into cans under the Agricultural Prices Support Board.

Source: Adapted from Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual; D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual; and D.B.S., Trade of Canada, Ottawa, Annual.

made for the carcass equivalent value of the by-products, such as lard fat and products such as feet and edible trimmings, which are not generally sold at retail in this country, and this was deducted from the stockyard price.

It was not possible to determine, with any degree of accuracy, the farm-gate price for hogs, because of the difficulty in arriving at a cost for transporting hogs from the farm to the first point of sale. The farmer is paid on a carcass-graded basis and, in most instances, delivers his hogs directly to the packing plant or public stockyards in his own truck or by hired truck. In either case, there is a transportation cost. Some hogs are also purchased at the farm and, when payment is made, a charge for trucking may be deducted. It is, therefore, difficult to determine a transportation cost which could be deducted from

the stockyard price in order to arrive at a farm-gate price.

The calculations made of stockyard and retail prices, price spreads and farmers' shares (stockyard basis) are summarized in Table 10. Both retail and stockyard prices fluctuated considerably from year to year over the 10-year period. An upward or downward movement of stockyard prices was reflected in a movement of retail prices. The retail price movement, however, generally showed greater fluctuation in prices. The stockyard price trended downwards.

The price spread increased from 1949 to 1954, decreased in 1955, and then increased from 1956 to 1958. In this latter year, the price spread approached the peak level of 19.7¢ reached in 1954. Over the period as a whole, there was a definite widening of the spread.

The farmer's share (stockyard basis) of the retail equivalent values averaged 60% over the period. From 1949 to 1951, the farmer's share remained fairly stable at about 66%, but from 1952 to 1956 it moved downwards to 57.3%. In 1957 the farmer's share increased slightly, but dropped again in 1958 to 56.5%. Over the period as a whole, the farmer's share definitely decreased.

The widening spread and the declining farm share seem to have been due mainly to a substantial increase over the decade in the amount of processing and packaging. This refers to the smoked, and not the fresh cuts. Ham and bacon used to be sold in whole cuts, but now usually sell defatted, skinless, boneless, in small cuts or slices, and packaged in plastic.

As we have indicated earlier, prices vary with the seasonal pattern of marketings. A summary of the 10-year monthly averages of stockyard prices and retail equivalent values, price spreads and the farmer's share of the retail value is given in Table 11.

Pork price spreads tend to be more narrow during the first half of the year and wider during the latter half. This tendency can be explained by the seasonal hog marketing pattern, already referred to, and the lag in retail prices. Prices for hog carcasses usually advance during the first half of the year when hog marketings are declining. Since retail prices tend to lag behind stockyard prices during upward and downward movements, price spreads are narrower on the upswing in the first half of the year, and wider during the downswing in the second half of the year. When pork prices are rising or high, there is some resistance at retail to higher prices because of the ready substitution of other meat, (notably beef) for pork. When pork prices are falling or low, there seems to be a tendency to resist decreases in marketing margins. The seasonal pattern of the farm share is inverse to that of the spread, i.e., the share tends to be larger during spring and summer and smaller during autumn and winter.

14. Comparison of Canadian and United States Price Spreads for Pork

A valid comparison of Canadian and United States price spreads cannot be made. One basic reason is that the farm price used in the

TABLE 10. SUMMARY OF FARM (STOCKYARD)-RETAIL SPREADS ON PORK, CANADA, 1949 TO 1958

Calendar Year	Composite Retail Price ^a (¢/lb.)	Retail Equivalent Value of 1 lb. Carcass Pork ^b (¢)	Stockyard Price B1 Hogsc (¢/carcass lb.)	Farm (Stockyard)		Farmer's Share (Stockyard Basis) of Retail Value (%)
				By-product Valued (¢/carcass lb.)	Price Less By-products (¢/carcass lb.)	
1949	54.4	41.9	29.6	2.0	27.6	65.9
1950	53.4	41.1	28.4	1.8	26.6	64.7
1951	60.0	46.2	32.6	2.3	30.3	65.6
1952	52.2	40.2	25.4	1.3	24.1	60.0
1953	59.4	45.7	28.6	1.5	27.1	59.3
1954	62.2	47.9	30.0	1.8	28.2	58.9
1955	50.2	38.7	23.8	1.4	22.4	57.9
1956	52.0	40.0	24.4	1.5	22.9	57.3
1957	59.0	45.4	29.1	2.0	27.1	59.7
1958	57.9	44.6	26.8	1.6	25.2	56.5

a Retail prices of five major pork cuts weighted regionally, with adjustment for minor cuts.

b Based on a carcass-retail yield of .77.

c Prices of B1 hog carcasses on 11 public stockyards, weighted regionally by gradings.

d Amount allowed for by-products.

TABLE 11. SUMMARY OF CALCULATIONS OF FARM (STOCKYARD)-RETAIL SPREADS FOR PORK,
10-YEAR MONTHLY AVERAGES, CANADA, 1949 TO 1958

Month	Composite Retail Price ^a (¢/lb.)	Retail Equivalent Value of 1 lb. Carcass Pork ^b (¢)	Stockyard Price B1 Dressed Hog ^c (¢/carcass lb.)	By-product Value (¢/carcass lb.)	Farm (Stockyard) Price Less By-products (¢/carcass lb.)	Farm (Stockyard) -Retail Spread (¢)	Farmer's Share (Stockyard Basis) of Retail Value (%)
Jan.	53.4	41.1	26.7	1.8	24.9	16.2	60.6
Feb.	53.9	41.5	27.0	1.8	25.2	16.3	60.7
Mar.	54.3	41.8	27.4	1.8	25.6	16.2	61.2
Apr.	54.2	41.7	27.1	1.8	25.3	16.4	60.7
May	54.4	41.9	27.5	1.6	25.9	16.0	61.8
June	58.0	44.7	30.4	1.7	28.7	16.0	64.2
July	58.7	45.2	30.0	1.5	28.5	16.7	63.1
Aug.	59.3	45.7	30.0	1.7	28.3	17.4	61.9
Sept.	59.3	45.7	29.3	1.8	27.5	18.2	60.2
Oct.	58.0	44.7	27.1	1.8	25.3	19.4	56.6
Nov.	56.2	43.3	25.7	1.6	24.1	19.2	55.7
Dec.	54.9	42.3	26.3	1.7	24.6	17.7	58.2

a Retail prices of five major pork cuts weighted regionally, with adjustment for minor cuts.

b Based on a carcass-retail yield of .77.

c Prices of B1 hog carcasses on 11 public stockyards, weighted regionally by gradings.

d Amount allowed for by-products.

determination of the United States price spread is the price for all grades of hogs sold live at the farm. In Canada a stockyard price for a B1 grade of hog carcass is used. In addition to the difference in the basis of farm prices, there are differences in the method of comparing farm and retail prices. For these reasons, no detailed comparison was attempted.

Bacon

Bacon is one of the main pork products and as such makes up approximately 15% of the hog carcass. Over the period of study, the per capita consumption of bacon in large urban centres was about 7.8 pounds per year. Consumer expenditures on bacon over the same period amounted to about 24% of expenditures on all pork products. Over the period 1954 to 1957, approximately 50% of the bacon was sold sliced and the proportion of sales of sliced bacon has increased during these four years.¹

15. The Seasonal Pattern of Frozen Bellies in Storage, First Business Day of the Month

Stocks of frozen bellies are normally built up during the winter months to a high point in May, and are withdrawn from storage from June to October, a period of lower marketings, and processed into bacon. It may be noted at this point that previous to the decade of study, it took from three weeks to one month to cure bacon and, at present, by an injecto process bellies may be cured in two or three days. The seasonal pattern of frozen bellies in storage is shown in Table 12.

TABLE 12. INDEXES OF MONTHLY PATTERN OF FROZEN BELLIES IN STORAGE, CANADA, 10-YEAR AVERAGES, 1949 TO 1958

(Average for 10 Years = 100)

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
86.9	105.0	121.8	151.3	178.4	172.6	151.3	100.4	48.7	17.9	20.6	45.1

Source: Adapted from D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

16. Comparison of the Seasonal Pattern of Retail and Wholesale Prices of Bacon and B1 Carcass Prices

Table 13 illustrates monthly changes of the retail and whole-

1 The Dominion Bureau of Statistics started to report separately the sales of bacon, sliced and not sliced from 1954.

TABLE 13. MONTHLY PATTERN OF RETAIL AND WHOLESALE PRICES
FOR BACON AND FARM PRICES FOR B₁-CARCASS,
CANADA, 10-YEAR MONTHLY AVERAGES, 1949 TO 1958.

(Average for 10 Years = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Retail Price	97.7	97.4	97.2	96.6	96.2	99.4	101.3	102.6	104.3	104.7	102.8	99.5
Wholesale Price (Winnipeg -Toronto)	96.4	98.0	96.7	95.2	96.4	101.3	101.8	104.2	107.4	104.9	101.0	97.0
B ₁ Carcass Price	96.1	96.8	98.2	97.1	98.6	109.0	107.5	107.5	105.0	97.1	92.5	94.3

Source: Adapted from D.B.S., Prices and Price Indexes, Monthly, and Department of Agriculture, Livestock Market Review, Annual.

sale prices of bacon and B₁ carcass prices. Generally the changes in prices of B₁ hog carcasses are reflected in the retail and wholesale prices of bacon. There is, however, a time lag in the movement of retail and wholesale bacon prices behind the movement of hog carcass prices. This would seem to be partly explained by the time elapsed between buying the carcass and selling the bacon, caused by storage and processing. Of the three sets of prices, as given in Table 13, hog carcass prices show the largest variations and thus have a tendency to swing more rapidly upwards and downwards. Next are wholesale prices which tend to change more rapidly in both directions than the retail prices. The result is a narrowing of the retail bacon margin in the seasonal upswing of prices and a widening on the seasonal downswing. On the whole, the prices are above their annual average during the summer and early autumn and below their average during the winter and early spring.

DAIRY PRODUCTS

1. Characteristics of Milk and Milk Products Affecting their Price and Cost of Marketing

Raw cow's milk contains about 87% water and about 13% solids. The solids are divided into about $3\frac{1}{2}\%$ fat and $9\frac{1}{2}\%$ non-fat solids, the latter being in the form of proteins, calcium, phosphorus and riboflavin.

Milk is used in many ways: as fluid milk, in manufacture of butter (creamery, dairy and whey), ice cream, cheese (cheddar, process and other types), concentrated products (whole milk products and milk by-products), and used on the farm (farm-home consumed and fed to live-stock).

Milk is a highly perishable product, which means that special care must be used from the time it is produced until it is in the hands of the consumers in either the fluid form or one of the manufactured forms. This special care in handling of milk, as well as other necessary marketing operations, has a definite bearing on the costs and the farm-retail spreads of dairy products in general.

The marketing of fresh milk includes three major functions - assembly, processing and distribution, which in many cases are performed by the same firm. In these three operations the biggest cost factors are payrolls and containers.

The marketing of manufactured milk products includes by and large the same three major functions, but these are usually performed by different firms and necessitate various and more expensive operations. All these additional operations make the costs of processing and marketing of manufactured milk products, other than butter, higher than of fluid milk and, therefore, the spreads are larger.

2. Dairy Products Regulations and Marketing Channels

Fluid milk is usually consumed within the district of production, while many of the manufactured dairy products enter interprovincial and export trade. Consequently, there are local, provincial and federal regulations that apply to milk and milk products.

Local by-laws regulate the supplying of milk or manufactured milk products and they make provisions for the care, handling, storage, transportation and distribution of these products.

Generally, provincial regulations apply to the entire milk industry. In some provinces, however, these regulations apply only to the production and marketing of fluid milk and cream.

All manufactured dairy products are governed by regulations under the Canada Dairy Products Act. According to the federal regulations, grade names, standards, packing and marking are prescribed for creamery butter, cheddar cheese and dry skimmed milk and each of these products must be graded before entering into interprovincial or export trade. Dairy products for which grade names are not established, such as dairy and whey butter, ice cream, all varieties or kinds of cheese, other than cheddar, and concentrated milk products, other than dry skimmed milk, are required to meet prescribed standards of composition, packing and marking before being exported or moved from one province to another.

For marketing of dairy products a wide variety of packages is necessary. Fluid milk leaves the producer's premises in cans or in tank trucks. Fluid milk is sold to consumers in bottles or waxed paper containers. The sale of fluid milk by dairies takes three forms: (1) direct sale by home delivery; (2) sale through retail outlets; and (3) sale to institutions (hospitals, schools, etc.).

Creamery butter leaves the processing plant in a solid pack of 56 pounds, which requires parchment liners in either a wooden or fibre box. At retail, butter is sold by grade and brand names in one-pound or half-pound prints in parchment or specially treated paper. The sale of creamery butter is done from creameries to consumers, institutions, retail stores, wholesalers and jobbers.

Cheddar cheese is packed in cylindrical form or square-type packages. To the consuming public cheddar, as well as all other varieties of cheese, is sold mostly in packages of one-pound or less. The marketing channels for cheese are similar to those for butter.

Evaporated milk is sold mostly in 16-ounce tins. Dry skimmed milk is packed in paper bags with polyethylene liners. Consumer-size packages are mostly of paper, made up of one, three and five-pound sizes. The manufacturers of concentrated milk products put these products either under their own or buyers' brands.

3. Production and Utilization of Milk and Milk Products

Total milk production in Canada shows a general upward trend that continues for several decades. There were, however, short periods in the past when the production was on the decline. Also, the last decade 1949-58, had two distinct periods. From 1949 until 1952, the total milk production was decreasing, but since 1953 it has been increasing, and in 1958 it attained an all-time record of 18 billion pounds.

The increase in total production, as well as the increase in average production per cow, is closely connected with higher quality of dairy cattle, better feeding and better management of dairy herds. The recent higher results are obvious, because the total milk production is much higher than that in the 1930's, although at that time the number of

milk cows was higher than at present by more than half a million head.

These rather significant changes in the total milk production, production per cow and the number of milk cows over the decade 1949-58, are given in Table 1.

TABLE 1. TOTAL MILK PRODUCTION, NUMBER OF MILK COWS AND PRODUCTION PER COW, CANADA, 1949 TO 1958

Year	Total Production (million lbs.)	No. of Milk Cows (millions)	Production per Cow (lbs.)	Index of		
				Total Production	No. of Milk Cows	Production per Cow
				(1949 = 100)		
1949	15,918	3,237	4,917	100	100	100
1950	15,322	3,119	4,912	96	96	100
1951	15,310	2,973	5,150	96	92	105
1952	15,309	3,006	5,093	96	93	104
1953	16,036	3,084	5,200	100	95	106
1954	16,528	3,120	5,297	104	96	108
1955	16,946	3,150	5,380	106	97	109
1956	16,966	3,160	5,369	107	98	109
1957	17,306	3,147	5,499	109	97	112
1958 ^a	18,057	3,129	5,771	113	97	117

a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

An outline of the overall picture of the Canadian dairy industry over the last 10 years is presented in Table 2 which shows the total milk production and the proportion of its utilization in manufacture, fluid sales and home use.

In Table 2 we can see that between 39% and 44% of milk has been used in manufacture of creamery butter and close to 30% for fluid milk consumption. These two products are the most important in the total utilization of milk, because over the period 1949-58, they have accounted for about 75% of the total milk produced. The remainder of about 25% of the milk was used in the manufacture of cheese, concentrated products, ice cream, dairy butter and for farm consumption. Within this group we notice the growing importance of concentrated milk products and ice cream and the substantial relative decline in production of dairy butter and to a lesser degree, of cheese. Milk used on farms for home consumption and livestock feeding has shown only a slight relative decline.

Table 3 shows that from 1949 until 1951 there was a decline in production of creamery butter, but since 1952, the production has increased, and in 1958 it reached an all-time record of 336.1 million

TABLE 2. TOTAL MILK PRODUCTION AND UTILIZATION AS PER CENT OF PRODUCTION, CANADA, 1949 TO 1958

Calendar Year	Production (million lbs.)	Used in Manufacture			Concen- trated	Used on Farms	
		Fluid Sales Milk & Cream (%)	Creamery Butter (%)	Cheese (%)	Milk & Ice Cream (%)	Dairy Butter (%)	Other Purposes ^a (%)
1949	15,918	28.1	41.2	8.5	7.0	4.6	10.6
1950	15,322	29.7	40.0	7.5	7.6	4.2	11.0
1951	15,310	30.2	39.3	6.9	8.6	4.1	10.9
1952	15,309	28.3	42.9	5.3	9.0	3.4	11.0
1953	16,036	28.4	44.2	5.7	8.3	2.8	10.6
1954	16,528	28.5	44.3	6.2	8.2	2.4	10.4
1955	16,946	29.3	44.0	5.7	8.6	2.1	10.3
1956	16,966	30.9	41.8	6.1	8.9	1.9	10.4
1957	17,306	31.1	41.0	7.0	9.2	1.7	10.0
1958 ^b	18,057	30.4	43.6	6.2	8.6	1.5	9.7

^a Includes milk consumed in farm homes and fed to livestock.

^b The figures for 1958 are preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual; The Dairy Review, Ottawa, Monthly.

TABLE 3. PRODUCTION OF PRINCIPAL DAIRY PRODUCTS, CANADA, 1949 TO 1958

Year	Creamery Butter	Cheddar Cheese	Fluid Milk & Cream	Ice Cream
	(million lbs.)			(million gals.)
1949	279.8	116.9	4,468.0	24.8
1950	261.5	97.7	4,545.5	23.8
1951	257.2	88.8	4,618.5	25.4
1952	280.7	67.8	4,326.4	27.3
1953	302.8	76.7	4,548.1	28.8
1954	313.2	85.3	4,713.6	28.6
1955	318.6	80.0	4,961.8	32.4
1956	303.3	84.7	5,234.0	33.2
1957	303.4	99.0	5,386.6	35.1
1958 ^a	336.1	90.5	5,491.5	36.5

^a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

pounds. Cheddar cheese production showed a similar decrease at the beginning of the decade, and in 1952 its production dropped to the lowest level in several decades. However, since 1953 the production has increased and in the last five years it has been maintained at the level between 80 and 100 million pounds.

Between 1949 and 1958, the sales of fluid milk and cream increased from 4,468.0 million pounds to 5,491.5 million pounds. This increase in consumption, however, was due to the increase in population since the per capita consumption has shown a slight decline for some time. Ice cream was the only product that showed a substantial increase over the whole period.

Although there are several concentrated milk products, only four are produced in large quantities, as is shown in Table 4. Of these four principal concentrated milk products, skimmed milk powder showed the biggest production increase, rising from 64.3 million pounds in 1949, to 186.8 million pounds in 1958. Also, the production of whole milk powder and evaporated whole milk showed a substantial rate of increase. Evaporated whole milk and skimmed milk powder account for over 80% of the production of this group.

TABLE 4. PRODUCTION OF PRINCIPAL CONCENTRATED MILK PRODUCTS, CANADA, 1949 TO 1958

Year	Evaporated Whole Milk	Condensed Whole Milk	Whole Milk Powder	Skim Milk Powder
(million pounds)				
1949	231.3	23.5	13.2	64.3
1950	256.5	14.5	15.7	53.3
1951	290.4	19.5	17.4	52.8
1952	305.7	16.6	16.0	88.2
1953	272.0	18.5	18.7	82.9
1954	280.3	13.6	18.8	83.3
1955	294.9	13.2	20.9	87.1
1956	305.2	17.2	20.6	79.0
1957	316.8	14.7	23.1	120.7
1958 ^a	310.2	14.2	19.7	186.8

a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

4. Domestic Disappearance

During the past decade, no substantial changes occurred in the overall domestic disappearance per capita of dairy products.

The last column of Table 5 shows that for the whole period, annual domestic disappearance of all dairy products in terms of fluid milk, has shown a slight and almost continuous decline over the period.

TABLE 5. DOMESTIC DISAPPEARANCE OF DAIRY PRODUCTS,
CANADA, 1949 TO 1958

Year	Total Butter	Total Cheese	Whole Milk Products	Milk By- products	Ice Cream	Fluid Milk & Cream	All Dairy Products in Terms of Milk
(pounds per capita)							
1949	22.1	5.3	16.5	5.2	9.3	412.4	1,049.8
1950	22.3	5.6	19.3	5.8	8.6	411.6	1,062.7
1951	21.2	5.7	20.0	6.5	9.1	405.6	1,033.8
1952	20.7	5.8	20.3	5.9	9.4	391.3	1,011.3
1953	20.6	6.2	20.7	6.4	9.7	394.3	1,016.2
1954	20.4	6.4	20.4	7.0	9.3	392.2	1,007.2
1955	20.3	6.6	20.5	7.4	10.4	386.6	1,004.3
1956	20.5	6.4	21.4	7.4	10.4	395.1	1,018.5
1957	20.3	6.6	21.1	7.6	10.6	390.5	1,010.6
1958 ^a	19.1	6.7	20.4	8.9	10.8	386.2	984.3

a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

There are, however, definite changes in the consumption trends of particular dairy products. Although total production of creamery butter is increasing, and in 1958 it attained an all-time record of 336.1 million pounds, consumption per capita is irregularly declining. The 1949 per capita consumption of butter was 22.1 pounds and in 1958 it dropped to 19.1 pounds, which represents close to 14% decrease. In comparing 1958 with 1957, the decrease per capita was about 1.2 pounds which is a 6% decrease. In total consumption this means that in 1958 Canadians consumed 20.4 million pounds less of butter than in 1957. This decrease in 1958 was probably caused by an increase in retail prices for butter, which in turn was caused by the increase in price support for butter from 58¢ per pound to 64¢ per pound. At the same time total disappearance of margarine increased from 73 million pounds in 1949 to 145 million pounds in 1958. On per capita basis, the consumption of margarine increased from 5.4 pounds to 8.5 pounds, which is 57.4%. The increase in per capita consumption of margarine in 1958 over 1957 was close to 9%. In 1949 the combined butter-margarine consumption per capita was 27.5 pounds and in 1958, it was 27.6 pounds.

Also, the per capita consumption of fluid milk shows a slow and almost steady decline. It dropped from 412.4 pounds in 1949 to 386.2 pounds in 1958. As butter and fluid milk represent close to

three-quarters of the total milk production, it seems that with increased production the stocks of dairy products will also increase. At the end of 1958, the stocks of creamery butter had increased by 24 million pounds over 1957 and were only seven million pounds lower from an all-time high of 101 million pounds in 1955.

The consumption of other dairy products including cheese, ice cream and concentrated milk products, shows a definite upward trend. For dry skimmed milk, especially, there has been a great increase in production and in per capita consumption. The per capita consumption of milk by-products was 71% higher in 1958 than in 1949. A very important development in the dry skimmed milk industry has been the "instant" type of milk powder. This development has been a contributing factor to the increase in household consumption.

5. Exports and Imports of Dairy Products

Until the end of World War II, Canada was an exporter of large quantities of cheddar cheese which were sent almost exclusively to the United Kingdom. However, in the past few years, Canada has been exporting relatively small quantities of cheddar cheese, evaporated milk and whole and skimmed milk powder. Of all these products the exports of whole milk powder show a considerable increase over the decade and the export of evaporated milk shows a strong decline, dropping from 33.6 million pounds in 1950 to 3.2 million pounds in 1958. Exports of skimmed milk powder and cheese show great variations from year to year, which indicates that their markets are very uncertain. Table 6 presents exports and imports of dairy products over the decade 1949-58.

The biggest obstacle to the export of Canadian dairy products has been high prices, which make sales on international markets very difficult. Table 7 shows wholesale prices of butter and cheese in Canada and in some selected countries. All prices are expressed in Canadian currency in order to facilitate comparisons. It can be seen from Table 7 that it was difficult for Canadian butter and cheese to compete with any major producing country during the whole of 1958. Also, in other recent years, Canadian prices were higher.

Imports of dairy products have never been high, except for certain varieties of cheese and for creamery butter, due to temporary shortages, as for example, in 1951 and 1952. Because of the support price for creamery butter, cheddar cheese and skimmed milk powder, imports of these products are restricted by import permits.

6. Geographical Pattern of Milk Production

Dairying is carried on in all parts of Canada, but it is not evenly dispersed among the provinces. The provinces of Ontario and Quebec, taken together, account for over two-thirds of the total milk production in Canada. Second in importance are the Prairie Provinces.

TABLE 6. EXPORTS AND IMPORTS OF DAIRY PRODUCTS,
CANADA, 1949 TO 1958

Year	Exports						Imports	
	Butter	Cheese	Evapora- ted Milk	Conden- sed Milk	Milk Powder		Butter	Cheese
					Whole	Skim		
(million pounds)								
1949	1.1	52.7	20.5	16.0	6.1	29.4	1.1	2.4
1950	1.6	63.1	33.6	3.9	9.2	9.1	a	10.2
1951	.5	30.7	21.6	8.3	10.1	1.0	17.9	11.7
1952	.9	2.1	19.9	6.1	13.0	29.7	4.6	12.1
1953	.2	16.4	13.4	5.2	13.9	23.5	a	5.2
1954	.1	5.0	6.3	1.8	14.3	10.4	a	5.9
1955	7.4	13.4	5.3	1.3	16.1	5.9	a	12.7
1956	2.1	11.5	6.3	2.6	17.3	5.9	a	9.0
1957	a	8.1	4.6	.7	16.4	.7	a	9.4
1958 ^b	a	15.5	3.2	nil	17.5	46.5	a	11.2

a Less than 50,000 pounds.

b Preliminary.

Source: D.B.S., Trade of Canada, Ottawa, Annual.

TABLE 7. QUARTERLY WHOLESALE PRICES FOR BUTTER AND CHEESE
IN CANADA AND IN SELECTED COUNTRIES, 1958

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
(cents per pound)				
<u>BUTTER:</u>				
Canada:				
Wholesale solids, 1st grade, Montreal f.o.b.	62	63	62	63
Denmark:				
Jobber's price for "Lur-branded" butter, Copenhagen	33	23	27	36
Netherlands:				
Creamery, ex-factory, Leeuwarden	49	40	34	41
United Kingdom:				
New Zealand, 1st grade, wholesale price, London	30	25	28	32
Danish, wholesale, London	33	27	32	41
<u>CHEESE:</u>				
Canada:				
Cheddar, 1st grade, white, Montreal	33	32	34	33
Denmark:				
"Lur-branded" first quality, Copenhagen	22	20	18	23
Netherlands:				
Full-cream Gouda, ex-factory, Leeuwarden	22	19	19	25
United Kingdom:				
English white (selected), London	19	20	24	36
Canadian, finest white, London	39	39	36	37
New Zealand, finest white, waxed, London	18	19	22	33
Dutch, full-cream Gouda, London	31	27	25	33

Source: Canada Department of Agriculture, Agriculture Abroad, Vol. XIV, No. 2, April 1959.

Over the decade 1949-58, Quebec's share in Canada's milk production has increased from 31.0% to 33.7%, while for the same period, the Prairies have shown a relative decrease from 24.5% to 22.4%. The shares of Ontario, British Columbia and the Maritimes, as shown in Table 8, have changed only insignificantly.

The main factors on the demand side contributing to a considerable development of dairying in Quebec and Ontario have been the proximity of big cities and industrial centres. And the main factors

on the supply side affecting the location of dairying were adequate rainfalls, enabling the economical production of grasses for cattle feed, and the suitability of the land.

With population increases and the changes in consumption of particular dairy products, there have been general changes in the utilization of milk. In several provinces a steadily increasing percentage of the milk has been disposed of in the fluid milk market or used for making concentrated milk products and ice cream, while smaller percentages have been used for making creamery butter and for consumption on farms. This shift is of importance to the producers of milk because the price for fluid milk is higher than for milk used for making butter or cheese.

TABLE 8. TOTAL MILK PRODUCTION, CANADA AND PROVINCES AS PER CENT OF CANADA, 1949 TO 1958

Year	CANADA (million pounds)	Maritime Provinces	Quebec	Ontario (per cent)	Prairie Provinces	British Columbia
1949	15,918	6.9	31.0	33.5	24.5	4.1
1950	15,322	6.9	31.5	33.1	24.1	4.4
1951	15,310	6.8	31.5	33.1	24.2	4.4
1952	15,309	6.7	31.7	33.7	23.6	4.3
1953	16,036	6.8	31.9	33.5	23.3	4.5
1954	16,528	6.8	32.4	33.4	22.7	4.7
1955	16,946	6.6	33.0	33.3	22.5	4.6
1956	16,966	6.5	33.7	33.2	22.1	4.5
1957	17,306	6.3	33.9	33.2	22.1	4.5
1958	18,057	6.1	33.7	33.3	22.4	4.5

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

Table 9 shows the total production of butter in Canada and the relative importance of particular provinces. Over the whole period, Quebec has been the biggest producer of butter and it is the only province whose share in Canada's butter production continues to increase. The Prairie's share as the other major surplus butter producer, decreased from 31.5% in 1949 to 26.9% in 1958.

Also, the production of cheddar cheese has shown some significant changes over the period, and these are shown in Table 10. Ontario has remained the principal cheese producer, not only in the last decade, but since the beginning of commercial production of cheese in Canada. However, over the last decade, its share in Canada's cheese production has shown a decrease from 72.7% to 68.5%, and that of Quebec has increased considerably, particularly in the last three years.

Dairy products, which rank as the third major contributor to

TABLE 9. CREAMERY BUTTER PRODUCTION, CANADA AND PROVINCES
AS PER CENT OF CANADA, 1949 TO 1958

Year	CANADA (million pounds)	Maritime Provinces	Quebec	Ontario (per cent)	Prairie Provinces	British Columbia
1949	279.8	6.7	33.4	26.7	31.5	1.6
1950	261.5	6.8	33.5	26.3	31.6	1.8
1951	257.2	6.6	35.5	26.1	30.8	1.0
1952	280.7	6.0	36.4	28.1	28.1	1.3
1953	302.8	6.5	37.1	27.3	27.3	1.8
1954	313.2	6.7	38.2	26.6	26.2	2.3
1955	318.6	6.4	39.1	26.4	26.1	1.9
1956	303.3	6.5	40.3	26.2	25.9	1.0
1957	303.4	6.2	40.2	25.5	27.1	1.0
1958	336.1	5.8	39.7	26.6	26.9	1.0

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 10. CHEDDAR CHEESE PRODUCTION, CANADA AND PROVINCES
AS PER CENT OF CANADA, 1949 TO 1958

Year	CANADA (million pounds)	Maritime Provinces	Quebec	Ontario (per cent)	Prairie Provinces	British Columbia
1949	116.9	1.4	21.2	72.7	4.3	.4
1950	97.7	1.5	21.0	72.0	4.7	.6
1951	88.8	2.5	18.2	74.2	4.4	.7
1952	67.8	2.1	16.5	75.5	5.2	.7
1953	76.7	1.7	14.1	78.0	5.2	.9
1954	85.3	2.0	18.2	74.2	4.7	.9
1955	80.0	1.8	18.9	74.4	4.1	.9
1956	84.7	1.9	26.0	67.9	3.5	.7
1957	99.0	1.8	28.4	66.0	3.1	.7
1958	90.5	1.8	26.3	68.5	2.5	.9

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

farm cash income in Canada are of leading importance to some of the provinces. In Quebec and British Columbia the farm cash income from dairying is the largest of all farm product groups, and in Ontario and the Maritime Provinces it is the second largest source of farm income.

7. Seasonal Variations in Production and Prices

The extreme climatic differences between the winter and summer seasons in Canada have established a seasonal cycle in milk production and in farm prices for milk. Table 11 indicates these seasonal changes in production and farm prices over the decade 1949-58.

TABLE 11. INDEXES OF MONTHLY VARIATIONS IN MILK PRODUCTION AND FARM PRICES, CANADA, 1949 TO 1958

(Annual Average = 100)

Month	1949-58 Monthly Average	
	Production	Average Farm Prices for All Dairy Products
Jan.	65	112
Feb.	60	113
Mar.	76	109
Apr.	96	99
May	123	92
June	145	88
July	138	89
Aug.	129	91
Sept.	115	93
Oct.	102	98
Nov.	79	106
Dec.	72	111

Source: Adapted from the D.B.S., The Dairy Review, Ottawa, Monthly.

From November until April milk production is well below average. In February the production is at its lowest level, being about 40% below the average. From April milk production starts to increase sharply, reaches its peak in June and then decreases sharply also and reaches the average level in October. The farm prices follow a similar trend, but in the opposite direction. They are highest in February and lowest in June. However, the variations in farm prices are less pronounced as their variations are only 13% above and 12% below the annual average.

These seasonal variations, however, in the total milk production and the average farm prices for all dairy products cannot be applied with the same degree of validity to all particular dairy products.

Of the whole group fluid milk shows the smallest variations and creamery butter the largest. Because these two products together account for about 75% of the total milk, they will be analyzed separately.

Table 12 shows monthly variations in the quantity of fluid milk sold and the farm and retail prices over the period 1949-58.

TABLE 12. INDEXES OF MONTHLY VARIATIONS IN THE SALES OF FLUID MILK AND THE FARM AND RETAIL PRICES, CANADA, 1949 TO 1958

(Annual Average = 100)

Month	1949-58 Monthly Average		
	Fluid Milk Sales	Farm Prices	Retail Prices
Jan.	99.0	100.0	99.5
Feb.	94.3	100.0	99.5
Mar.	104.7	99.8	99.5
Apr.	99.6	99.5	99.5
May	101.7	98.5	99.5
June	97.5	98.6	100.0
July	97.5	98.6	100.0
Aug.	99.3	99.1	100.0
Sept.	99.0	99.8	100.0
Oct.	102.9	101.2	100.5
Nov.	100.8	102.1	101.4
Dec.	103.2	102.3	101.9

Source: Adapted from the D.B.S., The Dairy Review, Ottawa, Monthly.

Farm and retail prices for fluid milk show small seasonal variations. Retail prices are slightly lower than the average between January and May; during the summer they equal the annual average and at the end of the year they show a slight increase. The difference between the highest and the lowest retail price during the season is 2.4%.

Farm prices are the lowest between May and July and then follow the pattern of retail prices. Fluid milk sales show relatively larger variations. They are the lowest in February, when the total milk production is the lowest; then they increase sharply in March and reach their seasonal peak. During the summer months fluid milk sales are below their annual average and toward the end of the year they approach their second peak. There are two main reasons why farm and retail prices do not show any appreciable seasonal variations. One is, that the consumption is fairly stable and the other, that the farm and retail prices are regulated in some of the provinces by the Provincial Milk Boards. Especially with regard to farm prices, all provinces exert some degree of control in establishing a minimum price. In British Columbia and Ontario farm prices are fixed according to special formulae which take into account relevant economic factors, such as changes in

the general price level, changes in the price of factors of production, and the quantity of milk sold on the fluid market in relation to the total quantity of qualifying milk. In other provinces farm prices for fluid milk are negotiated between the producers and the distributors and once approved by the Milk Boards, cannot be changed without a new approval of the Boards.

Creamery butter is one of the dairy products which shows clear seasonal variations in production and in prices. Cheddar cheese and concentrated milk products show a similar pattern of seasonal variations.

Table 13 indicates the pattern of seasonal variations in production and prices of creamery butter over the decade 1949-58. The

TABLE 13. INDEXES OF MONTHLY VARIATIONS IN PRODUCTION AND FARM AND RETAIL PRICES FOR CREAMERY BUTTER, CANADA, 1949 TO 1958.

(Annual Average = 100)

Month	1949-58 Monthly Average		
	Production	Farm Price	Retail Price
Jan.	41.9	103.1	102.6
Feb.	36.4	103.1	103.1
Mar.	52.0	104.5	103.5
Apr.	85.1	99.7	102.6
May	132.5	97.1	97.7
June	178.7	96.6	96.9
July	166.4	96.9	96.8
Aug.	151.8	97.6	97.1
Sept.	131.9	98.6	98.2
Oct.	105.8	99.8	99.1
Nov.	66.4	101.4	100.2
Dec.	51.1	101.8	101.5

Source: Adapted from the D.B.S., The Dairy Review, Ottawa, Monthly.

production is well below the annual average from November until April, rises sharply above the average in May, reaches its peak in June as does milk production, and then declines sharply and reaches the annual average in October. The variations in farm and retail prices, although seasonally clearly marked, are much smaller than the variations in production. The reason why the farm prices show such stability is the federal government policy to support creamery butter prices, which has been in effect since 1949. In the absence of government price supports, overproduction of creamery butter which occurs each summer would certainly force prices down much more than has been the case with the support.

There have been in effect for some time support prices for

cheddar cheese and skimmed milk powder. This action has also had a stabilizing effect on farm prices for that part of milk used in manufacture of these two products. Milk used in manufacture of ice cream and concentrated milk products, other than skimmed milk powder, was not subject to any support and its prices were adjusted according to supply and demand conditions.

8. Year-to-year Variations in Farm and Retail Prices

Over the period under study, farm prices for milk utilized in various dairy products have shown considerable year-to-year variations. These changes in prices were caused by several factors such as annual production, availability of the product at certain periods, and domestic and foreign demand. On the whole, however, the average price for all dairy products has shown an upward trend. This upward trend has been well-pronounced since 1954, and at the end of 1958 the average farm prices were 15.8% higher than in 1949.

The farm prices for various dairy products, as well as their index numbers, are shown in Table 14.

The year-to-year fluctuations in retail prices for particular products did not always follow the corresponding farm prices. However, except for 1952, average retail prices for dairy products as a group followed an upward trend similar to the average farm prices for all dairy products, but the rise at retail was more pronounced. Annual fluctuations in retail prices of the main dairy products are shown in Table 15.

9. Measurement of the Price Spread

The estimates of price spreads on dairy products, as presented in this study, are based on average prices for Canada and relate to the decade 1949-58. In general, these estimates show farm-retail spread and the farmer's share of retail equivalent value. However, when wholesale or manufacturing prices are available, as for creamery butter and evaporated milk, then the gross spread is subdivided into marketing stages.

In addition to price spread estimates for the country as a whole, this study includes three estimates of price spreads on creamery butter and skimmed milk powder that apply to particular cities. Also, an attempt has been made to show the price spread and the average farmer's share for the whole dairy products group.

The Price Spread on Fluid Milk

The summary of calculations of farm-retail spreads on fluid milk are shown in Table 16. Over the whole period the farm and retail prices have been rising at unequal rates. The rise of the retail prices, however, has been faster and this made the farm-retail spread larger and

TABLE 14. AVERAGE PRICES OF DAIRY PRODUCTS SOLD
BY FARMERS, CANADA, 1949 TO 1958

Year	All Products (\$/cwt.)	Creamery Butterfat (\$/lb.)	Cheese Milk (\$/cwt.)	Milk for Other Mfg. Products (\$/cwt.)	Fluid Milk (\$/cwt.)
1949	2.66	60.1	2.45	2.69	3.85
1950	2.63	56.2	2.23	2.61	3.91
1951	2.97	65.4	2.74	3.09	4.08
1952	2.90	61.8	2.16	2.76	4.39
1953	2.86	61.2	2.14	2.54	4.41
1954	2.84	60.6	2.20	2.52	4.37
1955	2.85	60.2	2.17	2.52	4.33
1956	2.90	59.8	2.47	2.59	4.32
1957	3.00	61.8	2.59	2.81	4.53
1958	3.08	66.0	2.60	2.88	4.62

Price Relatives

(1949 = 100)

1949	100.0	100.0	100.0	100.0	100.0
1950	98.9	93.5	91.0	97.0	101.6
1951	111.7	108.8	111.8	114.9	106.0
1952	109.0	102.8	88.2	102.6	114.0
1953	107.5	101.8	87.3	94.4	114.5
1954	106.8	100.8	89.8	93.7	113.5
1955	107.1	100.2	88.6	93.7	112.5
1956	109.0	99.5	100.8	96.3	112.2
1957	112.8	102.8	105.7	104.5	117.7
1958	115.8	109.8	106.1	107.1	120.0

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 15. AVERAGE RETAIL PRICES OF DAIRY PRODUCTS,
CANADA, 1949 TO 1958

Year	All Products	Creamery Butter (¢/lb.)	Plain Processed Cheese (¢/½-lb.)	Evaporated Milk (¢/16-oz. tin)	Fluid Milk (¢/qt.)
1949		64.6	29.2	14.8	17.8
1950		60.3	29.0	14.6	18.3
1951		67.8	32.4	16.1	19.6
1952		66.2	33.8	16.4	21.1
1953		65.0	33.0	15.4	21.1
1954		64.0	32.6	15.4	21.1
1955		64.1	32.9	15.1	21.1
1956		63.5	33.7	14.8	21.2
1957		65.7	35.6	15.7	22.5
1958		69.2	35.9	16.2	23.2

Price Relatives

(1949 = 100)

1949	100.0	100.0	100.0	100.0	100.0
1950	99.7	93.3	99.3	98.6	102.8
1951	108.6	105.0	111.0	108.8	110.1
1952	113.3	102.5	115.8	110.8	118.5
1953	112.4	100.6	113.0	104.1	118.5
1954	111.8	99.1	111.6	104.1	118.5
1955	111.9	99.2	112.7	102.0	118.5
1956	112.1	98.3	115.4	100.0	119.1
1957	118.1	101.7	121.9	106.1	126.4
1958	122.5	107.1	122.9	109.5	130.3

Source: Dominion Bureau of Statistics.

TABLE 16. SUMMARY OF CALCULATIONS OF FARM-RETAIL SPREAD
ON FLUID MILK, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/qt.)	Retail Equivalent Value of 100 lb. Farm Sale ^a (\$)	Farm Price (\$/cwt.)	Farm- Retail Spread (\$)	Farmer's Share of Retail Value (%)
1949	17.8	6.70	3.85	2.85	57.5
1950	18.3	6.89	3.91	2.98	56.7
1951	19.6	7.38	4.08	3.30	55.3
1952	21.1	7.94	4.39	3.55	55.3
1953	21.1	7.94	4.41	3.53	55.5
1954	21.1	7.94	4.37	3.57	55.0
1955	21.1	7.94	4.33	3.61	54.5
1956	21.2	7.98	4.32	3.66	54.1
1957	22.5	8.47	4.53	3.94	53.5
1958	23.2	8.73	4.62	4.11	52.9

a 100 pounds of milk equal 37.63 quarts, after deducting 3% for wastage.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

the farmer's share smaller. The main cause in the widening of the farm-retail spread has been the rising cost in the marketing operations of fluid milk which include assembly, processing (pasteurization and homogenization), bottling and distribution. In all these operations labour is a very important cost factor because in each of them it makes up a major part. Besides the labour, there are several other elements which make up part of the marketing costs and which have also added to the widening in the farm-retail spread. Among these expenses that contributed to the rising operating costs were containers, depreciation, property taxes, repairs and the use of more mechanical equipment, and advertising.

Of all dairy products, the farm-retail spread for fluid milk showed the biggest increase over the last decade. The increase in the spread for fluid milk was 44%, plain process cheese 34%, evaporated milk 11%, and creamery butter showed a decrease of 2%.

The Price Spread on Evaporated Whole Milk

The calculations of the farm-wholesale-retail spreads on evaporated milk are shown in Table 17. Over the period under study, the farm-retail spread on 100 pounds of milk going into the manufacture of evaporated milk averaged \$4.00. The spread increased from \$3.75 in 1949 to \$4.37 in 1952, which was a record for the whole period, and then declined to \$3.85 in 1956. Since then it has increased again. The farmer's share rose from 41.8% in 1949 to a maximum of 44.1% in 1951, then

TABLE 17. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS
ON EVAPORATED MILK, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/16-oz. tin)	Retail Equivalent Value of 100 lb. Farm Sale ^a (\$)	Wholesale Equivalent Value of 100 lb. ^b Farm Sale (\$)	Farm Price (\$/cwt.)	Farm- Retail Spread (\$)	Retailer's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	14.8	6.44	5.48	2.69	3.75	14.9	41.8
1950	14.6	6.35	5.39	2.61	3.74	15.1	41.1
1951	16.1	7.00	6.09	3.09	3.91	13.0	44.1
1952	16.4	7.13	5.96	2.76	4.37	16.4	38.7
1953	15.4	6.70	5.52	2.54	4.16	17.6	37.9
1954	15.4	6.70	5.52	2.52	4.18	17.6	37.6
1955	15.1	6.57	5.35	2.52	4.05	18.6	38.4
1956	14.8	6.44	5.35	2.59	3.85	16.9	40.2
1957	15.7	6.83	5.61	2.81	4.02	17.9	41.1
1958	16.2	7.04	5.70	2.88	4.16	19.0	40.9

^a 2.3 lb. whole milk equals 1 lb. evaporated milk. Canada Department of Agriculture, Canada Weights, Measures and Conversion Factors for Agricultural Products.

^b Calculated from average wholesaler's selling price in Ontario and Quebec.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

it dropped to 37.6% in 1954, and by 1958 it was fairly close to a point where it had been at the beginning of the decade. The changes in the farmer's share were caused by the fluctuations in farm and retail prices that have occurred throughout.

With regard to the spread itself, it would be of interest to mention its major causes. In order to make one pound of evaporated milk, 2.3 pounds of fluid milk have to be used, and in addition, this milk has to be put through the manufacturing process and then canned, hermetically sealed, packed in shipping cases, and transported to different places for distribution through various commercial channels. In all these operations the big items of expense are packing materials and supplies, wages and salaries, transportation, depreciation, taxes and advertising.

In breaking the farm-retail spread into farm-wholesale and wholesale-retail, one observation should be made - that over the whole decade, the farm-wholesale spread did not show any substantial increase, whereas the wholesale-retail spread increased from \$0.96 in 1949 to \$1.34 in 1958. This means that the retail outlets have increased appreciably their markup on the sale of evaporated milk.

The Price Spread on Plain Processed Cheese

From Table 18 one can see that for the most part, farm and retail prices for processed cheese follow a pattern similar to that of evaporated milk. The only difference is that retail prices for processed cheese have shown a more pronounced upward trend and that made the spread larger and the farmer's share smaller over the whole decade.

The farmer's share was 39.5% in 1949, then it dropped to 30.1% in 1952. In 1953 it started to rise again and in 1956 it was 34.5%. In 1957 and 1958 it has shown a slight drop again. The farmer's share on processed cheese is the smallest of all the principal dairy products. One of the reasons is that the processed cheese has to go through double processing operations. First, a cheddar cheese has to be made and then the cheddar is processed again with addition of several ingredients.

The Price Spread on Creamery Butter

The summary of calculations on creamery butter for Canada is shown in Table 19. Although both the farm and retail prices for creamery butter have shown wide fluctuations over the decade, and both have shown an upward trend, the increase in farm prices, particularly in 1958, was greater than in retail prices, with the result that the farmer's share was larger in 1958 than in 1949. Creamery butter is indeed the only dairy product which has shown an increase in the farmer's share over the whole decade. In 1949 the farmer's share was 76.3%, then it increased sharply to 79.1% in 1951, and the following year it dropped to 76.5%. Since 1953 the farmer's share increased again and has remained at about 77% until 1958, when it rose to 78.2%.

Over the entire period, the farm-retail spread on creamery butter has remained fairly stable and averaged 18¢ per pound. The subdivision of this total spread into marketing stages shows that the

TABLE 18. SUMMARY OF CALCULATIONS OF FARM-RETAIL SPREAD
ON PLAIN PROCESS CHEESE, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/½-lb.)	Retail Equivalent Value of 100 lb. Farm Sale of Cheese Milk ^a (\$)	Farm Price for Cheese Milk (\$/cwt.)	Farm- Retail Spread (\$)	Farmer's Share of Retail Value %
1949	29.2	6.20	2.45	3.75	39.5
1950	29.0	6.16	2.23	3.93	36.2
1951	32.4	6.88	2.74	4.14	39.8
1952	33.8	7.18	2.16	5.02	30.1
1953	33.0	7.00	2.16	4.84	30.6
1954	32.6	6.92	2.20	4.72	31.8
1955	32.9	6.98	2.17	4.81	31.1
1956	33.7	7.15	2.47	4.68	34.5
1957	35.6	7.56	2.59	4.97	34.4
1958	35.9	7.62	2.60	5.02	34.1

a Conversion factor for process cheese: 4.71 lbs. of cheese milk equals ½-lb. process cheese.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 19. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS
ON CREAMERY BUTTER, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Butterfat ^a (¢)	Wholesale Equivalent Value of 1 lb. Butterfat ^b (¢)	Farm Price Butterfat (¢/lb.)	Farm- Retail Spread (¢)	Retailer's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	64.6	78.8	75.6	60.1	18.7	4.1	76.3
1950	60.3	73.6	70.8	56.2	17.4	3.8	76.4
1951	67.8	82.7	79.3	65.4	17.3	4.1	79.1
1952	66.2	80.8	76.1	61.8	19.0	5.8	76.5
1953	65.0	79.3	74.4	61.2	18.1	6.2	77.2
1954	64.0	78.1	73.1	60.6	17.5	6.4	77.6
1955	64.1	78.2	72.8	60.2	18.0	6.9	77.0
1956	63.5	77.5	71.5	59.8	17.7	7.7	77.2
1957	65.7	80.2	74.1	61.8	18.4	7.6	77.1
1958	69.2	84.4	78.7	66.0	18.4	6.8	78.2

^a .82 lb. butterfat equals 1 lb. butter.

^b Wholesale price is for Montreal only.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

wholesale-retail spread has been increasing, while the farm-wholesale spread has been decreasing. The retailer's share of the retail price increased from 4.1% in 1949 to 6.8% in 1958.

The Price Spread on Creamery Butter - Montreal

The general trends in farm and retail prices for creamery butter in Montreal and Winnipeg have been very similar to those for Canada as a whole. In 1950 there was a general drop in prices of creamery butter at all levels - manufacturer, wholesaler, and retailer. The following year butter prices increased sharply, reached their first peak in the decade and then continued to decline until 1956. During 1957 and particularly 1958, butter prices started to rise rather sharply, and in 1958 the retail and farm prices reached their highest level in the whole decade.

The summary of calculations of farm-manufacturer-wholesale-retail spreads on creamery butter for Montreal are shown in Table 20. Over the period under study, the farmer's share increased from 80.3% in 1949 to 83.3% in 1958. The farm-retail spread shows a downward trend, declining from 15.6¢ per pound in 1949 to 13.9¢ per pound in 1958. This general decline in farm-retail spread was caused by the decline in farm-manufacturer spread. The wholesale-retail spread, which has remained fairly stable for most of the period, increased significantly in 1958.

The Price Spread on Creamery Butter - Winnipeg

Table 21 illustrates the annual movements of butter prices in Winnipeg over the decade 1949-58. Whereas there has been a general increase in the farmer's share on creamery butter for Canada as a whole, and for Montreal as a particular area, the farmer's share for the Winnipeg area was the same at the end of the decade as it was at the beginning. Comparisons of the retail, wholesale and farm prices in these two cities show that during the whole decade, the retail prices of creamery butter were almost the same in both cities. Montreal wholesale prices were higher at the beginning of the decade by about 2¢ per pound, and at the end of the decade, Winnipeg wholesale prices were higher by about 2¢ per pound. Farm prices for butterfat in Manitoba and in the Prairies in general have been much lower than in Quebec. This difference in farm prices between two regions accounts for the difference in farm-retail spread between Montreal and Winnipeg. Also, there has been a difference in trends of farm-wholesale and wholesale-retail spreads between Winnipeg and Montreal. Over the decade, the farm-wholesale spread in Winnipeg has been generally increasing and the wholesale-retail spread decreasing. In Montreal, however, the farm-wholesale spread has been decreasing and wholesale-retail spread increasing. Although the farm prices for creamery butterfat are much lower in Winnipeg than in Montreal, Winnipeg retail prices are no lower.

The Price Spread on Skimmed Milk Powder - Toronto

There are no published retail prices for skimmed milk powder for Canada, and in view of that, full analysis of the farm-retail spread cannot be presented. However, on the basis of available retail prices

TABLE 20. SUMMARY OF CALCULATIONS OF FARM-MANUFACTURER-WHOLESALE-RETAIL SPREADS
ON CREAMERY BUTTER, GRADE 1, MONTREAL, 1949 TO 1958

Calendar Year	Retail		Wholesale Prints		Wholesale Solids		Manufacturer's Equivalent		Farm- Retail Spread (¢)	Farmer's Share of Retail Value (%)
	Price (¢/lb.)	Value of 1 lb. Butterfat ^a (¢)	Value of 1 lb. Butterfat (¢)	Value of 1 lb. Butterfat (¢)	Value of 1 lb. Butterfat (¢)	Value of 1 lb. Butterfat (¢)	Price Butterfat (¢/lb.)			
1949	64.9	79.2	75.6	74.2	73.3	63.6	15.6	80.3		
1950	60.2	73.4	70.8	69.3	68.4	58.6	14.8	79.8		
1951	67.5	82.4	79.3	78.0	76.7	67.8	14.6	82.3		
1952	64.7	78.9	76.1	75.1	74.4	64.3	14.6	81.5		
1953	63.6	77.6	74.4	73.2	72.6	63.3	14.3	81.6		
1954	62.6	76.4	73.1	72.5	71.9	63.2	13.2	82.7		
1955	62.0	75.6	72.8	71.7	71.1	62.6	13.0	82.8		
1956	61.3	74.8	71.5	70.2	69.5	61.7	13.1	82.5		
1957	63.5	77.5	74.1	72.6	71.6	63.6	13.9	82.0		
1958	68.2	83.2	78.7	77.5	76.4	69.3	13.9	83.3		

^a .82 lb. butterfat equals 1 lb. butter.

^a .82 lb. butterfat equals 1 lb. butter.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 21. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS
ON CREAMERY BUTTER, GRADE 1, WINNIPEG, 1949 TO 1958

Calendar Year	Retail Price (¢/lb.)	Wholesale		Farm Price Butterfat (¢/lb.)	Farm- Retail Spread (¢)	Farmer's Share of Retail Value (%)
		Retail Equivalent Value of 1 lb. Butterfat ^a (¢)	Prints Value of 1 lb. Butterfat (¢)			
1949	63.5	77.5	74.3	58.6	18.9	75.6
1950	58.8	71.7	68.4	53.0	18.7	73.9
1951	66.6	81.3	78.4	62.7	18.6	77.1
1952	64.5	78.7	76.0	58.1	20.6	73.8
1953	63.9	78.0	74.7	57.5	20.5	73.7
1954	62.9	76.7	73.7	57.0	19.7	74.3
1955	62.4	76.1	73.7	56.8	19.3	74.6
1956	61.6	75.2	73.2	56.7	18.5	75.4
1957	64.2	78.3	76.5	58.6	19.7	74.8
1958	68.1	83.1	80.5	62.7	20.4	75.5

^a .82 lb. butterfat equals 1 lb. butter.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

for the Toronto area for 1958, a measurement of the farm-retail spread for that city is made.

The retail prices for skimmed milk powder at four Toronto chain stores remained stable during the year, averaging close to 40¢ per pound of skimmed milk powder. The value of the milk equivalent in one pound of skimmed milk powder is about 8¢. On the basis of the above-mentioned price, the farmer's share would be about 20% and the farm-retail spread about 32¢. This spread covers the costs of processing, containers and distribution.

The Spread on the Dairy Products Group as a Whole

Table 22 summarizes the equivalent farm and retail values for all dairy products bought each year by the average urban Canadian family over the decade 1949 to 1958. The retail and farm values of the dairy products were calculated from retail and farm prices for fluid milk, evaporated whole milk, plain processed cheese, and creamery butter. The quantity of each dairy product that was included in the food basket was determined from the Dominion Bureau of Statistics survey done in 1953.¹ The products for which retail prices were not available are represented in the group by the products most closely related to them for which retail prices were available.

Over the period under study, the retail value for dairy products bought annually by the average family increased from \$164.25 to \$197.90, while the equivalent farm value for these products increased from \$96.73 to \$110.80. The increase in retail value was 20.5% and increase in farm value was 14.5%. The larger increase in retail value caused the drop of the farmer's share for all milk used in the various dairy products from 58.9% in 1949 to 55.9% in 1958.

10. Comparisons with the United States

Comparisons with the United States were made on the basis of the farmer's share for particular dairy products and for the whole group taken together. These are presented in Table 23. The figures shown in Table 23 cannot be compared directly in spite of apparent similarity in names of the products. There are differences in component parts of products, calculations, conversion and other factors, which bring different results for apparently similar products. Having in mind all the differences, we can make comparisons in a general way only.

In both countries, farmer's shares of retail prices of dairy products show downward trends that go on for several years. However, the U.S. trend has been more pronounced than the Canadian. Canadian creamery butter is the only product which has shown an increase in the farmer's share over the decade. On the whole, the Canadian farmer's share for the dairy products group is higher than in the United States.

1 D.B.S., Urban Family Food Expenditure, 1953, Reference Paper No. 60.

TABLE 22. SUMMARY OF FARM-RETAIL SPREADS, DAIRY PRODUCTS GROUP, CANADA, 1949 TO 1958

Calendar Year	Retail Value ^a (\$)	Farm Value ^b (\$)	Farm-Retail Spread (\$)	Farmer's Share of Retail Cost (%)
1949	164.25	96.73	67.52	58.9
1950	162.89	94.42	68.47	58.0
1951	178.26	104.58	73.68	58.7
1952	185.03	104.03	81.00	56.2
1953	182.52	103.04	79.48	56.4
1954	181.51	102.32	79.19	56.4
1955	181.43	101.58	79.85	56.0
1956	181.59	102.22	79.37	56.3
1957	191.32	106.68	84.64	55.7
1958	197.90	110.80	87.10	55.9

a Estimates of annual expenditures for all dairy products made by the average Canadian urban family.

b Total amount paid to farmers for equivalent quantities of milk used in manufacture of all dairy products that were consumed by urban families.

Source: Adapted from the D.B.S., Urban Family Food Expenditure, 1953, Reference Paper No. 60, and Dairy Statistics, Ottawa, Annual.

TABLE 23. COMPARISON OF FARMER'S SHARES FOR DAIRY PRODUCTS,
CANADA AND THE UNITED STATES, 1949 TO 1958

Calendar Year	CANADA				(per cent)	UNITED STATES				
	Fluid Milk	Creamery Butter	Plain Processed Cheese	Evapo- rated Milk		Dairy Products	Fluid Milk	Creamery Butter	American Processed Cheese	Evapo- rated Milk	Dairy Products
1949	57	76	39	42	59	51	72	52	45	51
1950	57	76	36	41	58	50	72	54	48	50
1951	55	79	40	44	59	51	74	58	51	52
1952	55	76	30	39	56	51	74	59	53	53
1953	55	77	31	38	56	49	72	52	45	49
1954	55	78	32	38	56	46	70	48	43	47
1955	54	77	31	38	56	45	69	49	44	46
1956	54	77	34	40	56	45	71	50	44	47
1957	53	77	34	41	56	45	70	50	43	46
1958	53	78	34	41	56	44	69	48	41	45

Source: U.S.D.A., Farm-Retail Spreads for Food Products, Misc. Pub. No. 741; The Marketing and Transportation Situation, January 1959; and this study, Tables 16, 17, 18, 19 and 22.

POULTRY AND EGGS

Poultry

Characteristics of Poultry and its Use

The most striking characteristic of the Canadian poultry industry over the past 10 years has been its growth. In 1958 the total production of poultry was 96% higher than in 1949, and this strong upward trend is still continuing. The growth of poultry production, and in particular that of chicken and turkey broilers, was the greatest of any agricultural commodity over the period under study.

Another feature of the poultry and egg industry that should also be mentioned is its changing character. For many years the production of eggs and poultry was a sideline activity on nearly all Canadian farms. Small poultry flocks were maintained mainly to furnish farm families with eggs, poultry meat for festive occasions, and incidental income from the sale of small surpluses over home uses. Chicken meat was largely a by-product of egg production. And, although there are still many farms that maintain small flocks on a non-commercial or semi-commercial basis, specialization in broiler and egg production is now firmly established in many regions of the country and it is continuously increasing. The specialization is particularly evident in the chicken and turkey broiler industry, where breeding, hatching, mixing of feed, raising and marketing is carried out by different firms. This trend towards differentiation and specialization has necessitated the opposite trend, particularly in Ontario and Quebec, towards at least partial integration or contract farming. The essence of contract farming is that processors or feed companies encourage the producers to enter the broiler business by advancing them chicks and feed and advising them on husbandry and management. The producers are paid a fixed fee and the processors do the processing and marketing. Such a co-ordination of various functions facilitated the growth of the large-scale commercial operations of the broiler industry, which in turn have been made possible by the application of scientific, technological and economic findings. The results have been increased production, a year-round operation, and at the same time, lower operating costs.

Alternate Uses

In the past, poultry was sold on a live or New York dressed basis (only the blood and feathers removed). At present, poultry is available in a variety of forms. Generally all chicken and turkey broilers are sold ready-to-cook, whereas fowl and heavy chickens are still, to some extent, retailed on a New York dressed basis. Usually chicken broilers are sold fresh and chilled and the heavy turkeys are sold as frozen whole birds. Also cut up parts of chicken and turkey, frozen chicken and turkey pies, frozen fried chicken and roast turkey dinners, canned boneless poultry meat, chicken soups and mixtures with other foods such as chicken and noodles and chicken and vegetables, are

becoming increasingly prominent on the market. Another important outlet for poultry is barbecue restaurants. During the last 10 years, progress in the production of ready-to-cook products has been rapid. In 1950 only four million pounds of poultry was sold through registered stations on an eviscerated basis, and in 1958 this quantity increased to 250 million pounds.

Supply and Disposition

Table 1 shows the supply and disposition of fowl and chicken for the period 1949 to 1958. Over the period as a whole, the production of fowl and chicken averaged 80% of the total production of poultry, the remainder being accounted for by turkeys, ducks and geese. The production of chicken and fowl showed an almost continuous increase and in 1958 it was 81% higher than in 1949. Table 1 shows also that the total domestic disappearance followed fairly closely the rapidly growing production. Per capita consumption increased rapidly, and in 1958 was 57.3% higher than in 1949.

The greatest development in this period has come about in the production of chicken broilers, but this cannot be seen from Table 1 because the estimates on production do not show chickens, and especially broilers, separate from fowl and heavier chickens and, therefore, do not reflect the clear picture of the growth in broiler production. However, some indication of the development of the broiler industry may be obtained by referring to marketings of chickens under four pounds through the registered stations. Table 2 illustrates the marketings of chicken broilers, turkeys, fowl and chickens over four pounds through the registered stations. The biggest increase occurred in the marketing of broilers. In 1958 the registered stations marketed almost six times the number of broilers and four times the number of turkeys marketed in 1953. For the same period, the marketing of fowl and heavier chickens remained substantially unchanged.

Another important development in the marketing of poultry is the increased proportion of poultry marketed through the registered stations. While in 1951, the first year for which such estimates are available, only about a quarter of the poultry produced was marketed through registered stations, in 1958 the registered stations handled about 60% of the total production.

Seasonal Variations

Table 3 shows monthly variations in marketings and farm prices of fowl and chickens for Canada over the 1951-1958 period. While there has been a considerable variation in marketings ranging from 53% above the annual average in October to 37% below the annual average in February, the average price of fowl and chickens has remained fairly stable the year round, ranging only from 2% to 3% above average in the first half of the year, to about 2% to 4% below average in the autumn.

The seasonal pattern of broiler prices and marketings is changing and this is shown in Table 4. In the period 1953-55, the marketings reached a peak in July and a low in January; in the period

TABLE 1. FOWL AND CHICKENS, SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

(Dressed Weight Basis)

Calendar Year	Stocks at Jan. 1	Production	Imports	Total Supply	Exports	Stocks at Dec. 31	Domestic Dis- appearance	Per Capita Consumption	
								Dressed Weight	Eviscerated Weight
								(thousand pounds)				(pounds)
1949	13,106	245,499	3	258,608	15,477	20,398	222,733	16.7	12.9
1950	20,398	231,785	654	252,837	4,933	13,071	234,833	17.1	13.2
1951	13,071	284,238	4,531	301,840	1,276	26,888	273,676	19.5	15.0
1952	26,888	326,015	2,961	355,864	4,620	14,412	336,832	23.3	17.9
1953	14,412	309,392	5,945	329,749	440	22,325	306,984	20.7	15.9
1954	22,325	320,358	5,163	347,846	651	16,635	330,560	21.6	16.6
1955	16,635	380,026	4,614	401,275	255	16,364	384,656	24.6	18.9
1956	16,364	401,585	11,715	429,664	137	27,864	401,663	25.0	19.2
1957	27,864	409,926	6,581	444,371	309	26,169	417,893	25.2	19.4
1958	26,169	444,289	12,381	482,839	421	33,457	448,961	26.3	20.3

Source: D.B.S., Production of Poultry and Eggs, 1958.

TABLE 2. INDEX NUMBERS OF MARKETINGS OF BROILERS, FOWL, CHICKEN (4 LB. AND OVER) AND TURKEYS THROUGH REGISTERED STATIONS, CANADA, 1953 TO 1958

(1953 = 100)

	1953	1954	1955	1956	1957	1958
Broilers	100	166	204	345	420	588
Chickens, 4 lb. and over	100	100	74	95	79	94
Fowl	100	117	125	128	142	125
Turkeys	100	153	175	254	290	370

Source: Adapted from Poultry Products Market Review, Canada Department of Agriculture, 1958.

TABLE 3. INDEXES OF MONTHLY MARKETINGS AND PRICES, FOWL AND CHICKENS, CANADA, 1951 TO 1958

(Annual Average = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Marketings	71	63	67	72	89	93	101	118	134	153	139	101
Farm Prices	102	103	103	102	101	103	102	101	99	98	96	100

Source: Adapted from Poultry Products Market Review, Annual, Canada Department of Agriculture, and Agriculture Division, Dominion Bureau of Statistics.

TABLE 4. INDEXES OF MONTHLY MARKETINGS (CANADA) AND FARM PRICES (ONTARIO) OF CHICKENS UNDER
4 POUNDS (BROILERS), SELECTED PERIODS, 1953-55 AND 1956-58

(Annual Average = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Marketings												
1953-55	61	70	86	84	110	123	127	120	110	110	110	89
1956-58	78	75	82	87	101	99	104	111	118	125	126	96
Farm Prices												
1953-55	99	98	100	109	105	103	102	104	106	98	88	89
1956-58	98	103	106	108	107	109	111	108	90	89	82	87

Source: Adapted from Poultry Products Market Review, Annual, Canada Department of Agriculture.

1956-58, there was a shifting of heavy marketings from the early summer months to late summer and autumn. However, the overall picture for these two periods was similar, that is, that the marketings were below the annual average from the middle of December to the middle of April, and above average from May to November. The prices to producers are above the annual average for the first eight to nine months of the year and below for the remainder of the year.

Regional Characteristics of the Poultry Industry

Proximity to the large consuming centres, location, climate and feed supply have made for some regional differences in production and marketing of poultry. However, with the application of scientific and technological findings to the large-scale commercial production of chicken and turkey broilers, the limiting factors became less significant. In the production of broilers, Ontario, where this industry became established about 10 years ago, emerged as the biggest producing province, followed by Quebec, British Columbia, the Prairie Provinces and the Maritimes. Over the last few years, Ontario accounted for about 64%, Quebec close to 18%, British Columbia 9%, the Prairies 7% and the Maritimes 2% of the total broiler production. The production of broiler-type chicks is still increasing rapidly, and lately the Prairies show the highest rate of increase in Canada. In the production of turkeys, the central provinces are followed closely by the Prairies and these two regions together account for about 90% of the total production.

Marketing of Poultry

There has been a considerable change over the last 10 years in the channels for selling poultry. While the old practice of farmers selling directly to consumers is still followed on public markets and through private connections, the great bulk of poultry marketing is done through registered poultry stations. Usually, the processors who operate the registered poultry stations buy live birds from the producers and process them quickly after delivery to the processing plant. At the processing plant the birds are assembled, killed, dressed, eviscerated and chilled in water with crushed ice. Then the birds are graded, weighed and placed in plastic bags. So graded and weighed poultry is inspected by the inspectors of the Canada Department of Agriculture. After the poultry is graded, weighed and bagged, it must be refrigerated again until it is shipped to market or frozen. The bulk of chicken broilers is sold fresh; a much larger proportion of turkeys is being sold frozen. Most of the poultry is being sold directly by the processors, who also act as wholesalers, to retail outlets and barbecue restaurants. There are, however, poultry processors, particularly processors of turkeys, who do marketing through jobbers.

Grading

All poultry processing, eviscerating and grading stations, which meet the requirements for sanitation and operational control, are registered by the Canada Department of Agriculture. They, as well as the producers who raise the poultry on their own farms, are eligible to

grade poultry.

Four factors are taken into account in grading the poultry and these are: condition, conformation, flesh, fat and dressing. National grade standards have been established under the Livestock and Livestock Products Act for dressed and eviscerated poultry. These standards apply on products moving in interprovincial or export trade. There are also provincial regulations requiring the grading of poultry products for purchase and sale within the provinces. The retail sale of dressed or eviscerated poultry by grade in larger centres is required by all provinces except New Brunswick and Newfoundland.

Measurement of the Price Spread and Farmer's Share

In this study measurements are made of the farm-retail price spread for broilers¹ for Canada and the farm-wholesale-retail spread for two cities - Toronto and Winnipeg. The price spread for Canada covers the period 1953-58, because data are not available for earlier years.

(a) The Price Spread for Broilers - Canada, 1953-58

Broilers are one of few products which show a well-pronounced downward trend in prices at both consumer and producer levels. (Table 5.) The farm-retail spread shows a narrowing tendency. This narrowing of the spread was the result of the technological and commercial developments in the industry which have already been mentioned. Between 1953 and 1958 the farmer's share of the retail price dropped from 62.7% to 57.6%.

(b) The Price Spreads for Toronto and Winnipeg

The retail, wholesale and farm prices, price spreads and farmer's share for these two cities are for two years, as data for previous years are not available.

Table 6 shows monthly prices at three levels for the Toronto area. The price movements for Toronto are in line with the general pattern of price variation and marketings for the whole country. When marketings are light the prices are increasing, and when marketings approach their peak, which is in the last three months of the year, the prices are then the lowest.

The monthly farm and wholesale prices for Winnipeg have shown rather remarkable stability, while the retail prices have moved up and down more frequently. With this relatively new product, it is likely that retail stores frequently offer broilers as a special, in order to attract customers. The calculations of Winnipeg price spreads on ready-to-cook broilers are shown in Table 7.

¹ The retail prices for fowl are not available and, therefore, the measurement of the price spread for fowl has not been made.

TABLE 5. SUMMARY OF CALCULATIONS OF FARM-RETAIL
PRICE SPREAD ON BROILERS (READY-TO-COOK),
CANADA, 1953 TO 1958.

Calendar Year	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Live ^a (¢)	Farm Price Live (¢/lb.)	Farm- Retail Spread (¢)	Farmer's Share of Retail Value (%)
1953	63.6	46.4	29.1	17.3	62.7
1954	56.1	41.0	24.1	16.9	58.8
1955	57.2	41.8	26.6	15.2	63.6
1956	52.8	38.5	23.0	15.5	59.7
1957	52.0	37.9	21.8	16.1	57.5
1958	51.1	37.3	21.5	15.8	57.6

a 1 lb. live = .73 lb. eviscerated (ready-to-cook).

TABLE 6. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL
PRICE SPREADS ON BROILERS (READY-TO-COOK),
TORONTO, 1957 AND 1958.

Month	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Live ^a (¢)	Wholesale Equivalent Value of 1 lb. Live (¢)	Farm Price Live (¢/lb.)	Farm- Retail Spread (¢)	Farmer's Share of Retail Value (%)
<u>1957</u>						
Jan.	46.5	33.9	25.0	19.0	14.9	56.0
Feb.	46.5	33.9	26.8	21.5	12.4	63.4
Mar.	47.5	34.7	27.4	22.1	12.6	63.7
Apr.	49.3	36.0	28.4	23.1	12.9	64.2
May	49.6	36.2	28.2	21.8	14.4	60.2
June	48.8	35.6	28.2	21.4	14.2	60.1
July	50.6	36.9	30.4	23.7	13.2	64.2
Aug.	54.6	39.8	28.4	22.3	17.5	56.0
Sept.	51.1	37.3	27.7	21.3	16.0	57.1
Oct.	48.9	35.7	26.6	20.5	15.2	57.4
Nov.	45.7	33.4	25.6	19.5	13.9	58.4
Dec.	46.8	34.2	26.1	20.4	13.8	59.6
<u>1958</u>						
Jan.	47.0	34.3	26.9	21.1	13.2	61.5
Feb.	50.8	37.1	28.1	22.7	14.4	61.2
Mar.	47.5	34.7	28.5	23.1	11.6	66.5
Apr.	50.3	36.7	28.8	23.5	13.2	64.0
May	49.8	36.6	29.1	24.0	12.6	65.6
June	52.1	38.0	30.7	25.0	13.0	65.8
July	53.5	39.1	30.3	24.5	14.6	62.6
Aug.	52.3	38.2	27.8	21.3	16.9	55.8
Sept.	47.3	34.5	25.5	19.5	15.0	56.5
Oct.	45.7	33.4	23.2	17.3	16.1	51.8
Nov.	37.5	27.4	22.3	16.0	11.4	58.4
Dec.	38.8	28.3	21.6	15.9	12.4	56.2

a 1 lb. live = .73 lb. ready-to-cook.

Source: Canada Department of Agriculture, Poultry Products Market Report, Weekly.

TABLE 7. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL
PRICE SPREADS ON BROILERS (READY-TO-COOK),
WINNIPEG, 1957 AND 1958.

Month	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Live ^a (¢)	Wholesale Equivalent Value of 1 lb. Live (¢)	Farm Price Live (¢/lb.)	Farm- Retail Spread (¢)	Farmer's Share of Retail Value (%)
<u>1957</u>						
Jan.	55.7	40.7	35.0	23.0	17.7	56.5
Feb.	52.0	38.0	29.9	23.0	15.0	60.5
Mar.	54.0	39.4	31.4	22.8	16.6	57.9
Apr.	55.6	40.6	31.4	23.0	17.6	56.7
May	54.7	39.9	31.4	23.0	16.9	57.6
June	55.2	40.3	31.4	23.0	17.3	57.1
July	57.7	42.1	31.4	23.0	19.1	54.6
Aug.	56.3	41.1	31.4	23.0	18.1	56.0
Sept.	57.9	42.3	31.4	23.0	19.3	54.4
Oct.	55.9	40.8	31.4	22.0	18.8	53.9
Nov.	54.8	40.0	31.4	22.0	18.0	55.0
Dec.	54.2	39.6	31.4	22.0	17.6	55.6
<u>1958</u>						
Jan.	56.3	41.1	31.4	22.0	19.1	53.5
Feb.	55.0	40.2	31.1	22.0	18.2	54.7
Mar.	54.7	39.9	30.3	22.0	17.9	55.1
Apr.	57.4	41.9	30.3	22.3	19.6	53.2
May	58.1	42.4	30.3	23.0	19.4	54.2
June	57.2	41.8	30.3	23.0	18.8	55.0
July	58.6	42.8	30.3	23.0	19.8	53.7
Aug.	57.6	42.0	30.9	22.5	19.5	53.6
Sept.	58.0	42.3	31.4	22.5	19.8	53.2
Oct.	53.1	38.8	31.4	22.5	16.3	58.0
Nov.	49.2	35.9	31.4	22.5	13.4	62.7
Dec.	50.6	36.9	31.4	22.5	14.4	61.0

a 1 lb. live = .73 lb. ready-to-cook.

Source: Canada Department of Agriculture, Poultry Products Market Report, Weekly.

Comparisons with the United States

In making comparisons of the Canadian broiler industry with the United States, one must keep in mind the scale of operations of that industry in the United States. In 1957 slightly less than 700 commercial plants handled at least 75% of all poultry sold from all farms in the United States, and approximately 75 of these plants averaged more than 15 million pounds of live poultry annually.

In spite of their larger operations, the United States broiler growers, processors and merchandisers showed only slightly higher efficiency than their Canadian counterparts. Generally the United States retail and farm prices for broilers are lower, the farm-retail spread is almost the same in both countries, and the farmer's share in the United States is lower by about 2% than in Canada.

Eggs

Description of the Product

The egg is a biological structure intended by nature for reproduction of the chicken. It is also one of the most nutritious and versatile of human foods. An egg is a perishable commodity which begins to lose its quality after it is laid, even if it is cooled, packed and marketed promptly. Keeping temperature and humidity conditions at an optimum level retards this loss in quality to a large degree. Producer, wholesaler and retailer must all handle eggs properly to maintain egg quality until it reaches the ultimate consumer. The eggs are graded according to specified qualities. Quality factors may be divided into two general groups: exterior quality factors, apparent from external observations; and interior quality factors which involve the contents of the egg. To ascertain interior quality, each egg has to be candled individually. Research is underway to find an acceptable mass candling method, but to date in Canada, eggs are handled individually.

Alternate Uses

Eggs are used in the form of shell eggs or dried and frozen egg products. Shell eggs are the most common, and the great bulk of the production is being merchandized in that form. Of total egg production, only 5% goes for processing purposes, that is, for the manufacture of dried eggs and frozen egg products.

(a) Dried Eggs

This product is prepared from the raw, broken-out egg. A large proportion of the eggs dried in Canada are whole eggs, but increasing quantities are of the separated yolks and whites.

Approximately 95% to 98% of dried egg products are used in the baking trade and particularly by the ready cake mix manufacturers. The

remainder is used domestically and by the candy manufacturers. The production of dried eggs is about one million pounds annually.

(b) Frozen Egg Products

Eggs are frozen in various states, either as whole eggs (plain or fortified), yolks (plain, sugared or salted), or as frozen egg whites. Frozen eggs are used mainly by the baking trade, candy manufacturers, frozen dessert manufacturers, soup manufacturers, manufacturers of doughnut flour, pastries, ice cream, mayonnaise and salad dressing. They are also used in pharmaceutical products, as well as for leather tanning, lithographing, shampoos and by the cork industry.

The production of frozen egg products has varied considerably during the period under study, from a low of 10.9 million pounds in 1951, to an all-time record of 25.6 million pounds in 1957. The average annual production for the whole period was at a level of 16.7 million pounds.

Supply and Disposition

Table 8 gives a summary of supply and disposition of eggs in Canada for the period 1949 to 1958. The decline in production between 1949 and 1951 was caused, to a large extent, by the termination of egg contracts with the United Kingdom in 1949, in terms of which Canada was supplying large quantities of eggs during the war years and immediately after. In 1952, however, the production of eggs showed a considerable increase over 1951 and there has been an annual increase in each succeeding year. With the termination of egg contracts, the export of eggs dropped sharply in 1950 and has never since approached the wartime and early postwar level. However, the drop in exports has been compensated by the increased domestic disappearance, which in 1958 was 64% higher than that of 1949.

Eggs are sold both by the producers themselves and through registered grading stations. Table 9 shows the trend in the proportion of eggs marketed through the registered egg grading stations in Canada compared with the total production. In 1949 54.4% of eggs marketed went through the registered grading stations, and in 1958 this proportion fell to 44.9%. The remainder are either consumed on the farms, used for hatching, or sold directly to the consumers and retail outlets by the producers who carry out their own candling and grading.

During the past 10 years, improvement in feeding, breeding and management of poultry in Canada has increased the yearly egg output per bird considerably. Also, there has been improvement in quality and an increase in size of eggs produced. As a result, the proportion of lower grades, that is, B and C, has been reduced and the higher grades increased. (Table 10.)

Seasonal Variations in Prices and Marketing of Eggs

Extreme seasonal fluctuations in production and price, probably greater than for any other farm product, have characterized the egg

TABLE 8. EGGS: SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	(thousand dozen)									
Stocks at January 1	8,370	4,800	6,630	5,310	5,670	5,250	10,530	6,240	7,620	13,200
Production	307,073	293,727	291,234	342,527	355,184	385,819	386,011	404,311	446,476	449,819
Imports	250	897	4,674	1,550	1,560	2,187	2,086	4,118	1,607	2,434
Total Supply	315,693	299,424	302,538	349,387	362,414	393,256	398,627	414,669	455,703	465,453
Exports	42,564	14,792	7,103	13,420	7,718	7,274	4,040	3,939	9,628	19,386
Stocks at December 31	4,800	6,630	5,310	5,670	5,250	10,530	6,240	7,620	13,200	7,890
Used for Hatching	10,158	7,988	10,462	9,626	9,871	10,394	11,039	12,377	11,777	14,773
Domestic Disappearance	258,171	270,014	279,663	320,671	339,575	365,058	377,308	390,733	421,098	423,404
Per Capita Consumption	19.3	19.7	20.0	22.2	22.9	23.9	24.0	24.3	25.4	24.8
(dozen)										

Source: D.B.S., Production of Poultry and Eggs, Annual.

TABLE 9. EGG PRODUCTION AND EGG MARKETINGS THROUGH REGISTERED EGG GRADING STATIONS, CANADA, 1949 TO 1958

Year	Egg Production	Eggs Marketed through Registered Grading Stations	Marketings as Per Cent of Production
	(thousand dozen)		(%)
1949	307,073	166,996	54.4
1950	293,727	150,767	51.3
1951	291,234	141,677	48.6
1952	342,527	163,727	47.8
1953	355,184	156,945	44.2
1954	385,819	176,762	45.8
1955	386,011	169,411	43.9
1956	404,311	183,831	45.5
1957	446,476	203,334	45.5
1958	449,819	202,058	44.9

Source: D.B.S., Production of Poultry and Eggs, 1958, and Department of Agriculture, Poultry Products Market Review, 1958.

TABLE 10. EGGS: PER CENT DISTRIBUTION BY GRADE,
CANADA, 1949 TO 1958

Year	A Extra Large	A Large	A Medium	A Small	A Peewee	B Grade	C Grade	Cracks
1949	-	56.3	16.7	8.5	-	13.0	5.5	-
1950	-	58.6	16.6	7.9	-	11.7	5.2	-
1951	-	59.3	20.8	6.9	-	8.6	4.4	-
1952	-	58.2	21.4	5.2	-	10.5	4.7	-
1953	4.0	54.2	20.9	5.2	0.4	10.7	2.7	1.9
1954	5.7	54.2	21.7	5.3	0.4	8.3	2.0	2.4
1955	7.7	52.5	20.5	5.0	0.4	9.2	1.9	2.8
1956	8.6	49.9	21.6	5.5	0.5	9.0	1.9	3.0
1957	8.6	49.4	21.6	5.3	0.4	9.6	1.9	3.2
1958	9.0	49.2	21.5	5.5	0.5	9.2	1.8	3.3

Source: Poultry Products Market Review, Department of Agriculture,
Ottawa, Annual.

industry. The seasonal movements in egg prices are related to an irregular flow of products to market during the year. Generally, in the first six months of the year, egg marketings are heavy and in the second half of the year, marketings are relatively light. However, this seasonal pattern is not static and it has changed considerably over the years.

From Table 11 one can see how the seasonal variations in the egg marketing pattern and prices have changed in recent years. In the period 1943-47, average marketings reached a seasonal high in April and a low in October. April marketings were 55% larger and October marketings 47% smaller than the average annual marketings. In the five-year period 1949-53, the range of seasonal variation decreased to about a half of the previous five-year period 1943-47. In the third five-year period 1954-58, seasonal variation in marketings decreased to about one-third of the first period 1943-47. In this third period the seasonal high was in January with marketings 16% above average, and a low in August with 14% below average. Seasonal price variations have also declined with the changes in marketing pattern, but the seasonal price variation has not declined to the same extent as that of marketings. More detailed analysis of prices for different grades shows that the smallest spread among grades occurs during the months of above average marketings, and the largest spread occurs in the early autumn when marketing of higher grades of eggs is at its lowest level.¹

The variations in the seasonal marketing pattern have not been the same in all areas of the country. British Columbia has the smallest seasonal variation of egg marketings followed by the Maritimes and central Canada. The Prairie Provinces still show large variations in their seasonal egg marketing pattern. Especially in Saskatchewan,² almost half of the eggs produced during a year are put on a market during a four-month period - March to June. This is brought about by small flock units and severe winter conditions.

The levelling-out of seasonal variations in Canadian egg marketings has had a direct effect on the seasonal variation of prices of A-Large eggs and on the customary practices in the storage of shell eggs. The reduction in the seasonal variation of marketings was accompanied by a decrease in the storage of shell eggs. As more eggs became available in periods formerly characterized by seasonal light marketings, fewer storage eggs were required to supplement fresh supplies. In addition, less fluctuation in marketings and prices throughout the year

1 In a publication, Seasonal Variations in the Prices and Marketing of Livestock and Poultry Products 1947-1957, Professor R.G. Marshall of the Department of Agricultural Economics, Ontario Agricultural College, Guelph, Ontario, states that the largest spread in prices is approximately in October, when A-Large are about 18% over A-Medium prices, and A-Small are discounted to over 30% below. The smallest spread occurs throughout the late winter and spring months when A-Large are only 2%-3% above and A-Small 8%-9% below A-Medium prices.

2 In 1955 Saskatchewan marketed more than $7\frac{1}{2}$ million dozen eggs during the period of low prices, and less than 3 million dozen during the period of high prices.

TABLE 11. INDEXES OF SEASONAL PATTERN OF EGG MARKETINGS AND EGG PRICES
TO PRODUCERS, CANADA, 1943-47, 1949-53 AND 1954-58

(Annual Average = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>Egg Marketings</u>												
1943-47	97	112	142	155	140	133	87	71	72	53	60	78
1949-53	121	104	115	124	125	98	81	74	76	81	91	111
1954-58	116	96	104	108	113	98	91	86	88	93	97	109
<u>Egg Prices</u>												
1943-47	96	93	89	86	86	86	92	100	110	117	123	120
1949-53	85	84	87	86	87	92	108	116	119	122	115	100
1954-58	91	89	92	91	91	93	107	112	114	114	108	99

decreases the profitability of an egg storage program. Table 12 shows seasonal patterns of egg stocks in storage in Canada in two periods, 1949-53 and 1954-58.

TABLE 12. INDEX OF SEASONAL PATTERN OF EGG STOCKS
IN STORAGE, CANADA, 1949-53 AND 1954-58

(Annual Average = 100)

Month	1949-53	1954-58
January	5	29
February	30	81
March	70	107
April	108	115
May	167	140
June	212	174
July	214	179
August	180	135
September	134	105
October	65	72
November	15	39
December	3	26

Source: Adapted from D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

The smoothing out of the marketing pattern has been made possible through the improvement during the past 10 years in feeding, breeding and management of poultry in Canada. This trend towards year-round spread production of eggs is continuing. Also, the policy of the Agricultural Stabilization Board in regard to the support of shell egg minimum prices has had a stabilizing effect on all levels of egg prices, and particularly on the minimum prices to producers.

Regional Characteristics of the Egg Industry

The production of eggs for Canada and by provinces is shown in Table 13. The biggest egg producing province in the country is Ontario. Over the decade 1949-58, it has accounted for 40.5% of the total production. Next to Ontario is Quebec, with 15.8% of the total production. In terms of regions, central Canada is the main egg producing area, with 56.3% of the total; the Prairie Provinces are second, with 28.4% of the total; the Maritimes follow with 7.8%; and British Columbia accounted for 7.6%. In terms of increases in production during the decade, Nova Scotia recorded a 92% increase. Other provinces also showed substantial increases - Ontario, 65%; British Columbia, 56%; and Alberta, 55%.

TABLE 13. TOTAL EGG PRODUCTION IN CANADA AND PROVINCES,
AS PER CENT OF CANADA TOTAL, 1949 TO 1958

Year	CANADA (millions of dozens)	Maritime Provinces	Quebec	Ontario (per cent)	Prairie Provinces	British Columbia
1949	307.1	7.2	17.8	37.8	29.8	7.4
1950	293.7	7.3	17.1	40.8	28.0	6.8
1951	291.2	7.9	16.8	39.4	27.7	8.2
1952	342.5	7.7	16.1	40.7	27.7	7.8
1953	355.2	8.1	15.5	40.9	28.2	7.3
1954	385.8	8.3	16.4	40.7	27.1	7.4
1955	386.0	8.1	15.7	40.2	28.8	7.1
1956	404.3	8.4	14.7	40.2	29.0	7.7
1957	446.5	7.3	14.3	41.5	28.9	8.0
1958	449.8	7.2	13.2	42.6	29.1	7.9
Average 1949-58		7.8	15.8	40.5	28.4	7.6

Source: D.B.S., Production of Poultry and Eggs, Annual.

The Marketing of Eggs

(a) Arrangement and Assembly

The following are the methods most commonly used for delivery of eggs to grading stations: (1) direct delivery by the producers; (2) shipment by rail; (3) picking up by the grading stations; and (4) mixed, that is, delivery to a store by the producers and then, once a truckload is assembled, the egg grading station picks it up.

(b) Grading and Inspection

There are seven grades under which eggs are sold. Grade standards for shell eggs are established under federal legislation, which also requires that all eggs entering into interprovincial, export or import trade be graded.

All eggs passing through commercial channels are purchased from producers and sold to consumers on a graded basis. The same grade carries through from the producer to the consumer, unless there is some loss of quality in the marketing process.

The grading legislation provides that eggs may be graded either by a poultry producer (grading his own eggs), or in a registered egg grading station. The grading station must have approved grading equipment, approved graders and proper facilities for handling eggs, including refrigeration. The registered egg grading stations are privately operated, but are subject in their operation to the approval and supervision of the Federal Department of Agriculture.

In grading eggs, consideration is given to the three following factors: (1) interior quality, as determined by candling; (2) weight; (3) shell, as determined by the soundness and cleanliness of the shell.

Approximately 45% of the eggs produced in Canada go through the registered grading stations. Due to the concentration of the heavy volume of egg production in more restricted areas, the number of stations has been slowly declining during the past decade. Of the 55% of eggs that do not go through registered grading stations, a large number are graded directly for retail outlets by producers who have contracts with the retail outlets, or are sold directly by the producers to consumers.

(c) Sales to Processors, Wholesalers, Jobbers and Retail Stores

Eggs used for processing are usually packed in 30-dozen cases and used directly from cases when breaking for further processing. Wholesale firms and jobbers often buy eggs by whole carload lots in 30-dozen cases and then repack them in one-dozen cartons for the retail trade.

Some large chain stores have their own grading stations and a selected number of producers who supply eggs.

Small retail stores are serviced by individual producers, egg grading stations and by wholesalers or jobbers. Also, wholesalers and jobbers sell eggs to the processing plants, restaurants, hospitals, boarding houses and bakeries. There is a good deal of trade between wholesalers.

With regard to wholesaling, it is necessary to mention that this function in egg marketing, particularly in Ontario, is becoming much less important in the marketing system because the chain stores enter into contracts directly with the producers.

Measurement of the Egg Price Spread

In this study measurements of the price spread for Grade A-Large eggs are made for: (1) Canada as a whole; (2) four regions (Maritimes, Central, Prairies, British Columbia); and (3) Montreal.

(a) Price Spread for Eggs, A-Large, Canada, 1949-58

Table 14 shows producer prices and wholesale and retail equivalent values for Grade A-Large eggs marketed in Canada. There has been a downward trend at all levels of egg prices but this trend has been much more pronounced at the producer level. Between the years 1949 and 1958, retail and wholesale prices dropped by about 8% and the producer's price went down by about 19%, and that caused a decline in farmer's share from 81.5% in 1949 to 70.9% in 1958. The farm-retail spread increased from 11.1¢ per dozen in 1949 to 16.2¢ per dozen in 1958, with the increase taking place in the farm-wholesale component.

TABLE 14. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS
ON EGGS A-LARGE, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/doz.)	Retail Equivalent Value of 1 Dozen at Farm	Wholesale Equivalent Value of 1 Dozen at Farm ^a	Farm Price (¢/doz.)	Farm- Retail Spread (¢)	Farm- Wholesale Spread (¢)	Farmer's Share of Retail Value (%)
1949	61.8	60.0	53.5	48.9	11.1	4.6	81.5
1950	56.9	55.2	48.9	43.1	12.1	5.8	78.0
1951	70.7	68.6	62.2	54.9	13.7	7.3	80.0
1952	59.0	57.3	50.7	42.9	14.4	7.8	74.9
1953	68.1	66.1	60.1	50.8	15.3	9.3	76.8
1954	55.7	54.1	48.5	39.5	14.6	9.0	73.1
1955	62.2	60.4	54.3	45.5	14.9	8.8	75.4
1956	62.1	60.3	54.0	45.1	15.2	8.9	74.7
1957	56.3	54.7	48.1	38.3	16.4	9.8	70.0
1958	57.3	55.6	49.3	39.4	16.2	9.9	70.9

^a Based on a producer-retail yield of 97.1%.

This study shows the farmer's share for Grade A-Large eggs only and, therefore, two remarks should be made in this connection. First, the farmer's share for all eggs sold will be lower, as A-Large eggs represent roughly 50% of all eggs marketed and the rest are lower grade eggs for which the farm price is lower. Second, farmers sell less than a half of their egg production through registered egg grading stations and the remainder goes directly from the farmer to the ultimate consumer or the outlet stores, and it is likely that the farmer's share for that part would be higher.

(b) Regional Price Spreads

Table 15 shows regional prices, farmer's shares, and farm-wholesale and wholesale-retail spreads for Grade A-Large eggs. Generally, retail prices are highest in the Maritimes and lowest in the Prairies. Producer prices are lowest in the Prairies and highest in central Canada and the Maritimes, followed closely by British Columbia.

Wholesale margins are lowest in the central provinces, intermediate in the Prairies and British Columbia, and highest in the Maritimes. Total farm-retail margins, however, do not differ much regionally, except for the Maritimes where they are substantially higher, especially since 1953. The producers in the central provinces get the highest share of the retail price for their eggs, whereas the producers in the Prairies get the lowest.

(c) Price Spread for Montreal City

Table 16 shows monthly egg prices for Montreal for the period 1949 to 1958. Although this table presents the variation in prices for eggs Grade A-Large for the Montreal area only, it also could be taken as representative for a region or for the country as a whole. It is evident from this table that the trend towards seasonal levelling-out of all three sets of prices is continuing.

Comparison with United States

In the production and marketing of eggs, Canada and the United States follow the same trend. In both these countries specialization in production is now firmly established and increasing, although a large proportion of eggs is still produced on farms, which maintain small flocks on a non-commercial or semi-commercial basis. In the marketing of eggs, the most important development is the move towards more direct marketing and the resultant by-passing of oldline wholesalers.

Because Canadian and United States calculations of the farmer's share do not refer to the same quality and grade of eggs, direct comparison of the farmer's share on eggs cannot be made. In Canada, the farmer's share is calculated on Grade A-Large eggs, and in the United States, on all grades and sizes. In view of this, the Canadian farmer's share is higher than the United States. However, there is one common characteristic of the farmer's share in both countries, that in the period 1949-58, it shows a well-pronounced downward trend.

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS
OF CANADA, 1949 TO 1958

Year	MARITIMES			CENTRAL PROVINCES			PRAIRIES			BRITISH COLUMBIA ^a	
	Farm Price	Retail Equivalent Value		Farm Price	Retail Equivalent Value		Farm Price	Retail Equivalent Value		Farm Price	Retail Equivalent Value
1949	51.4	63.9		50.9	61.2		42.9	55.0		47.0	58.7
1950	45.6	57.9		55.1	55.8		38.0	50.8		45.2	57.7
1951	55.7	70.1		57.1	70.7		48.2	62.0		54.4	68.1
1952	46.0	61.3		44.6	58.7		36.6	51.0		42.4	56.6
1953	51.5	69.3		53.1	68.0		43.6	58.9		50.8	64.3
1954	41.4	57.9		40.7	55.0		34.8	49.4		40.4	54.0
1955	46.5	64.4		47.4	61.9		38.9	53.4		46.2	60.0
1956	46.6	64.0		46.8	61.2		38.2	53.9		47.7	63.3
1957	40.6	58.0		39.8	55.9		33.8	49.4		36.8	53.2
1958	41.3	59.1		41.9	57.3		32.7	48.5		37.5	53.9

(cents per dozen)

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS
OF CANADA, 1949 TO 1958 (Cont'd.)

Year	Farmer's Share as Per Cent of Retail Equivalent Value (per cent)			
	<u>MARITIMES</u>	<u>CENTRAL PROVINCES</u>	<u>PRAIRIES</u>	<u>BRITISH COLUMBIA^a</u>
1949	80.4	83.2	78.0	80.0
1950	78.8	79.0	74.8	78.3
1951	79.5	80.8	77.7	79.9
1952	75.0	76.0	71.8	74.9
1953	74.3	78.1	74.0	79.0
1954	71.5	74.0	70.4	74.8
1955	72.2	76.6	72.8	77.0
1956	72.8	76.5	70.9	75.4
1957	70.0	71.2	68.4	69.2
1958	69.9	73.1	67.4	69.6

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS
OF CANADA, 1949 TO 1958 (Cont'd.)

Year	Total Farm-Retail Spread (cents per dozen)		
	<u>MARITIMES</u>	<u>CENTRAL PROVINCES</u>	<u>BRITISH COLUMBIA^a</u>
1949	12.5	10.3	11.7
1950	12.3	11.7	12.5
1951	14.4	13.6	13.7
1952	15.3	14.1	14.2
1953	17.8	14.9	13.5
1954	16.5	14.3	13.6
1955	17.9	14.5	13.8
1956	17.4	14.4	15.6
1957	17.4	16.1	16.4
1958	17.8	15.4	16.4
			12.1
			12.8
			13.8
			14.4
			15.3
			14.6
			14.5
			15.7
			15.8
			12.1
			12.8
			13.8
			14.4
			15.3
			14.6
			14.5
			15.7
			15.8

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS
OF CANADA, 1949 TO 1958 (Cont'd.)

Year	Farm-Wholesale Spread		
	(cents per dozen)		
	<u>MARITIMES</u>	<u>CENTRAL PROVINCES</u>	<u>PRAIRIES</u> <u>BRITISH COLUMBIA^a</u>
1949	6.6	3.3	5.6
1950	7.1	5.2	6.6
1951	8.9	6.6	7.0
1952	9.4	7.1	7.6
1953	13.2	7.9	9.2
1954	11.7	7.9	9.1
1955	13.3	7.5	9.0
1956	12.3	7.5	10.7
1957	12.4	8.6	12.6
1958	13.0	8.5	12.5

TABLE 16. EGG PRICES AT MONTREAL, 1949 TO 1958^a

Average prices, by months, 1949 to 1958, for Grade A-Large eggs, as received by producers, as paid by retailers and as paid by consumers.

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	(cents per dozen)									
<u>Farm Price</u>										
Jan.	49.0	32.2	40.0	37.9	40.7	39.8	33.8	39.5	33.6	35.1
Feb.	44.2	38.4	47.9	37.2	46.1	43.0	38.0	40.2	35.2	36.2
Mar.	45.2	41.6	50.9	36.0	52.0	38.2	41.4	45.2	34.9	46.1
Apr.	46.8	39.4	54.0	35.4	52.0	37.6	41.0	46.6	35.2	38.8
May	47.2	36.7	57.9	34.9	52.5	37.8	39.2	45.8	35.4	39.8
June	49.5	41.6	63.6	45.2	61.5	42.1	48.8	53.2	37.0	44.4
July	56.0	47.0	69.5	56.9	67.0	48.3	55.6	56.6	50.1	45.5
Aug.	64.0	50.1	69.9	55.1	67.1	47.5	62.8	57.8	48.1	50.0
Sept.	69.0	56.0	70.5	57.9	68.8	52.5	62.1	56.8	50.6	52.5
Oct.	65.0	59.1	70.0	64.6	62.5	47.0	60.8	57.2	54.0	48.8
Nov.	57.0	55.0	61.8	52.6	47.1	40.4	55.5	40.4	44.2	43.0
Dec.	47.5	50.0	45.2	41.9	38.8	34.9	49.0	36.1	39.5	39.4
<u>Wholesale Equivalent Value</u>										
Jan.	52.4	34.1	46.8	45.3	47.5	48.2	41.9	47.2	41.8	43.7
Feb.	45.2	40.7	53.9	44.2	53.0	50.7	45.7	48.4	44.1	44.7
Mar.	46.6	43.0	57.4	42.6	60.1	46.5	49.5	53.6	43.5	53.9
Apr.	47.6	41.0	59.2	41.9	59.4	45.5	48.8	53.6	43.7	47.4
May	48.1	41.1	64.0	41.9	59.9	45.5	47.1	54.2	43.8	47.7
June	50.0	47.6	68.4	51.9	68.2	49.7	56.1	61.3	45.2	52.2
July	57.3	52.9	75.2	62.7	75.1	56.8	63.8	64.2	58.7	53.6
Aug.	66.0	54.2	75.5	61.5	75.3	55.2	70.8	65.6	56.6	57.6
Sept.	70.4	61.2	76.9	64.0	75.8	60.8	69.7	65.5	58.6	61.2
Oct.	64.1	65.8	75.5	70.5	71.2	55.1	68.7	65.3	62.5	57.3
Nov.	58.3	61.6	68.4	58.9	56.1	48.7	63.9	48.9	52.8	51.6
Dec.	50.0	57.6	52.4	48.9	47.6	42.9	57.6	45.1	48.0	48.4

TABLE 16. EGG PRICES AT MONTREAL, 1949 TO 1958^a (Cont'd.)

Average prices, by months, 1949 to 1958, for Grade A-Large eggs, as received by producers, as paid by retailers and as paid by consumers.

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
(cents per dozen)										
<u>Retail Equivalent Value</u>										
Jan.	38.7	55.2	50.6	55.5	53.9	48.8	53.2	51.0	50.3	51.8
Feb.	45.2	60.3	50.5	59.6	58.4	51.9	53.8	49.0	49.7	51.2
Mar.	48.3	65.8	50.1	65.8	53.6	55.3	59.6	49.0	59.7	61.5
Apr.	47.4	65.9	49.3	66.2	52.1	55.5	60.4	48.7	53.6	55.2
May	46.6	70.9	48.6	66.2	52.0	54.2	59.8	48.4	53.3	54.9
June	51.4	74.4	59.2	73.2	55.2	62.1	67.3	50.4	58.3	60.0
July	58.6	82.6	70.8	81.2	61.9	70.8	71.4	64.3	60.7	62.5
Aug.	61.0	80.7	69.9	81.0	61.7	76.9	73.3	62.8	64.6	66.5
Sept.	64.3	85.4	71.0	83.0	66.1	75.4	72.3	65.8	68.9	71.0
Oct.	72.8	86.2	77.7	80.5	61.6	74.6	73.0	68.7	65.3	67.2
Nov.	68.4	76.7	67.3	62.9	55.5	69.1	56.3	59.9	60.0	61.8
Dec.	64.3	63.6	57.5	55.5	48.9	62.8	51.0	55.2	54.9	56.5

a Adapted from Poultry Products Market Report, Canada Department of Agriculture, Weekly.

FLOUR AND BREAD

1. A Brief Description of the Marketing and Distribution System for Wheat to Wheat Bread

All commercial wheat grown in western Canada is marketed through the Canadian Wheat Board which sets an initial price to the farmer and adjusts its selling price more or less according to world market conditions. The farmer delivers his wheat to the country elevator which received it on account of the Wheat Board. After weighing and determining the grade and the dockage for impurities, the elevator agent issues a cheque to the farmer based on the initial Wheat Board price. The initial price is based on the Lakehead and is subject to deductions for freight and elevator handling charges between the country shipping point and the Lakehead. These handling charges cover weighing, storage and outloading from the country elevator into boxcars.

The wheat then moves in carlots, mostly eastward through the main inspection point at Winnipeg, where the grade is confirmed or established by sampling. From Winnipeg, the wheat then moves in carlots to elevators at the Lakehead where it is handled in bulk by a mechanical unloading and elevating operation. In the process, the wheat is automatically sampled again to check the grade and dockage. The "screenings" which are removed in a cleaning process are usually saleable for livestock feed. After storage, the wheat is shipped by lake vessel during the navigation season or otherwise by boxcars to an eastern milling company's storage or to private or government storage.

Forty-one of the 73 flour mills in Canada are located in Ontario, 28 in the Prairie Provinces, and four in Quebec. The flour mills buy wheat by grades from the Wheat Board in proportion to the mixtures to be used in the milling process. Flour milling is a highly-mechanized, complex blending operation. Flours of varying baking quality may be milled from a particular lot of wheat. The selling prices of the different grades of flour vary according to the quality. Certain non-wheat ingredients are added to the flour such as vitamins and chemical blending and maturing agents.

There are valuable by-products from the milling process called "mill feeds". Variations in prices of the mill feeds have significant influence on the profitability of the milling operation. The mill feeds may be sold directly by the flour mills to farmers as feed for livestock, they may be distributed through feed dealers, or they may be used as constituents in further processing into prepared livestock and animal feeds.

The baking industry consists of a number of chain bakeries and independent bakeries ranging down to small local establishments. Larger bakeries in eastern Canada buy their flour from the milling companies on a current requirement basis. Sometimes the flour is deliv-

ered by the milling company to large bakeries in bulk in special railway cars but it is usually distributed by truck. The smaller independents may obtain their supplies of flour from wholesalers.

After the flour reaches the bakery, the processing and distributing operations are many and varied. Initially, the flour may have to be stored for a while, then the ingredients have to be mixed more or less mechanically, the bread has to be baked in the ovens and then cooled, then the bread usually is sliced, and then the loaves are wrapped and delivered. Wages and salaries, and ingredients are the largest items among baking costs, and packaging and delivery costs also are important items. Considerable selling and promotional expenses are incurred by bakeries in bread distribution, and the loss from bread going stale is significant. Some of the stale bread is salvaged as feed for livestock.

The bread moves from the bakeries directly to chain stores by bulk truck shipments, and is delivered in smaller lots to independent grocery stores, restaurants and other retail establishments. Some of the larger bakeries operate depots in urban centres where bulk is broken and from which these smaller establishments are serviced. Bread-selling routes are served by the delivery truck system with drivers on a salary-commission and handling a range of bread and cake products. The delivery man is the bakery firm's main link with the customer. In the case of wholesale sales to retail stores, the delivery man not only sells but arranges for display space and gives advice on other selling details. The proportion of bakery sales made at wholesale has been increasing.

2. Milling of "Manitoba" Hard Spring Wheat Into Flour

A kernel of wheat is made up of three main parts: (1) the outer parts which become the animal feed called "bran"; (2) the body of the kernel, called the "endosperm"; and (3) the germ, which normally produces the new plant.

The endosperm is the part of the kernel that becomes flour after the separation of the bran and the germ. This process is known as extraction and the rate of extraction is the quantity of flour that may be extracted from a given quantity of wheat. In Canada, the extraction rate varies from 72% to 74%. A hundred pounds of wheat will produce 72 to 74 pounds of flour plus 26 to 28 pounds of millfeeds, i.e., bran, shorts and middlings. The higher the extraction rate, the more bran, shorts and middlings that are included in the flour. Bran, shorts and middlings are higher in protein than the endosperm that produces the flour. Therefore, the higher the extraction rate the higher the protein content.

The early method of milling wheat into flour was simply to crush the wheat and remove the bran from the flour by "bolting" or sifting. Flour obtained from this process was usually of one grade. The introduction of the roller process and other refinements resulted in the wheat being reduced more gradually and made possible not only a more

complete separation of bran, shorts and middlings, but also a large number of flour separations called streams.

There are generally four main "streams" which may be blended together in a large number of combination to produce different grades of flour. Stream 1 is the best 55% of the total flour, being freest from bran and germ, lowest in ash and whitest in colour. Streams 2 and 3 are the next best 30% and 12%, respectively, and Stream 4 the poorest 3%. These percentages refer to division of total flour, not the extraction rate.

These four main streams are used to produce the most common types of flour sold by Canadian flour mills:

Commercial Grades of Flour

	<u>Streams</u>	<u>% of total flour</u>
First Patent	1	Best 55%
Bakers Patent	1 + 2	Best 85%
Export Patent	1 + 2 + 3	Best 97%
Straight Run	1 + 2 + 3 + 4	Best 100%
Fancy Clear	2 + 3 + 4	Poorest 45%
First Clear	3	Poorest 15% less 3% low grade
Second Clear	3 + 4	Poorest 15%

In general the less the quantity of first patent flour, etc. that is taken off, the higher the quality of that which is left.

It may be seen from this brief description of the milling process that flour of different baking quality may be milled from a particular lot of wheat. The selling prices of the different grades vary according to quality with the clear selling at a much lower price than the first patents. First patent flour, with an extraction rate of 72%, contains 55% of the flour and, therefore, represents only 40% of the wheat milled. This partly explains the higher cost.

Various non-wheat ingredients are added to the flour such as: (1) enrichment by adding vitamins and other nutrients; (2) chemical improvers such as potassium bromate to hasten dough development when flour is made into dough; (3) chemical blending agents, such as benzoyl peroxide, that destroys the natural yellow pigment and produces a whiter product; and (4) maturing agents such as chlorine dioxide that cuts the natural time of maturing from several months to a few hours.

3. Hard Spring Wheat Flours, Used in Making Bread

The qualities of a flour used for bread-making depend on a number of factors such as the grade of the flour and the quantity and quality of the gluten (protein) in the wheat from which it is milled. The quantity and quality of gluten in wheat is partly an inherited characteristic and is affected by soil and climatic conditions during

the growing and harvesting season. Canadian hard spring wheats have an international reputation for quality with good gluten content. Soil and climatic conditions, such as frost before the kernels have filled out or wet weather during harvest, lower both the quantity and quality of the gluten so important in making good bread. Climatic factors, therefore, may have an important effect on the milling of flour and the quantities exported to other countries.

Different flours require different treatment in baking for best results. The miller, therefore, tries to maintain the quality by the control of the mill streams of the different flour grades.

4. Production of Wheat Flour and Mill Feeds

Table 1 shows the production of hard spring wheat flour, total wheat flour and the hard spring wheat flour as a per cent of the total wheat flour production. The table indicates that from 78.9% to 85.4% of the total wheat flour is produced from "Manitoba" hard spring wheat, grown largely in the three Prairie Provinces. The great importance to the milling industry of top quality wheat is apparent.

TABLE 1. "MANITOBA" HARD SPRING WHEAT FLOUR COMPARED
TO TOTAL FLOUR PRODUCTION, CANADA, 1949-58

Year	Hard Spring Wheat Flour ^a	Total Flour Production (thousand cwt.)	Hard Spring Wheat Flour as a Per Cent of Total Flour Production (%)
1949	32,706	39,045	83.8
1950	32,482	41,182	78.9
1951	38,337	45,029	85.1
1952	39,679	47,244	84.0
1953	35,425	43,602	81.2
1954	35,616	41,716	85.4
1955	33,734	39,629	85.1
1956	33,382	39,987	83.5
1957	31,050	37,640	82.5
1958	33,795	41,193	82.0

a Total of Flour Patents, numbers 1, 2, 3 and Whole Wheat and Graham Flour.

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, Monthly.

The production of wheat flour, the quantity exported and the quantity available for domestic consumption are summarized in Table 2. Wheat flour production increased from 1949 to 1952, decreased from 1953 to 1957, and increased during 1958. Exports of wheat flour followed the same trend as production. The leading market for Canadian wheat flour is the United Kingdom. Other important markets are the Philippines, Venezuela, Ceylon, the West Indies, Belgian Congo, Japan and United States.

TABLE 2. PRODUCTION OF WHEAT FLOUR, QUANTITY EXPORTED AND QUANTITY AVAILABLE FOR DOMESTIC CONSUMPTION, CANADA, 1949-58

Year	Production	Exports	Available for Domestic Consumption ^a
(thousand cwt.)			
1949	39,045	18,958	20,087
1950	41,182	19,764	21,418
1951	45,029	23,697	21,332
1952	47,244	25,694	21,550
1953	43,602	22,002	21,600
1954	41,716	19,342	22,374
1955	39,629	17,328	22,301
1956	39,987	16,950	23,037
1957	37,640	14,665	22,975
1958	41,193	17,326	23,867

a Flour available for domestic consumption is obtained by deducting exports from production.

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, Monthly.

During the last few years, Canadian wheat flour exports have been affected by huge wheat surpluses built up in the United States which were being marketed on a "give-away program". This disposal of grain and flour is heavily subsidized and is sold on long term, much of it for payment in local currencies. A large volume of this surplus grain and flour is also bartered and finds its way into traditional Canadian markets. Other factors affecting Canadian exports of wheat flour should be mentioned, such as re-establishment of the flour milling industry in war devastated countries and new flour mills in others. A lowering of quality (protein content) for some of the years 1949 to 1958 has also had its effect in reducing exports of flour.

With declining exports of wheat flour, great pressures are exerted on the domestic market. Increasing population should, in time, make the industry less dependent on the export markets. Table 2 showed

that the quantity of wheat flour available for domestic consumption increased from 1949 to 1958 with decreasing exports, especially between 1952 and 1957.

In Table 3 a comparison is made of the production of the main grades of hard bread-wheat flour and the total hard bread-wheat flour. Patent No. 1 is a finer flour and is largely sold in the retail food stores as a family or "all purpose" flour. The flour sold to bakeries is mainly No. 2 Patent. A very large proportion of No. 3 Patent flour is exported.

TABLE 3. PRODUCTION OF HARD WHEAT BREAD
FLOUR, BY GRADES, CANADA,
1949-1958

Year	Patent No. 1	Patent No. 2	Patent No. 3	Whole Wheat and Graham Flour	Total Hard Wheat Flour
(thousand cwt.)					
1949	7,026	9,691	15,498	491	32,706
1950	7,099	10,543	14,328	512	32,482
1951	7,319	11,319	19,097	602	38,337
1952	7,385	10,541	21,163	590	39,679
1953	7,392	10,188	17,266	579	35,425
1954	7,654	11,844	15,533	585	35,616
1955	7,314	11,763	14,116	541	33,734
1956	7,257	11,635	13,923	553	33,368
1957	6,961	10,902	12,675	512	31,050
1958	7,531	12,716	13,078	470	33,795
(Per cent of Total Hard Wheat Flour)					
1949	21.5	29.6	47.4	1.5	100.0
1950	21.8	32.5	44.1	1.6	100.0
1951	19.1	29.5	49.8	1.6	100.0
1952	18.6	26.6	53.3	1.5	100.0
1953	20.9	28.8	48.7	1.6	100.0
1954	21.5	33.3	43.6	1.6	100.0
1955	21.7	34.9	41.8	1.6	100.0
1956	21.7	34.9	41.7	1.7	100.0
1957	22.4	35.1	40.8	1.7	100.0
1958	22.3	37.6	38.7	1.4	100.0

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, monthly.

Table 4 shows the production of wheat flour and millfeeds, i.e., bran shorts and middlings. The millfeed products remaining after the extraction of flour from wheat are normally sold for livestock feed. Production of millfeeds, except for the years 1951 and 1952, ranged from .33 to .35 pounds per pound of flour produced.

TABLE 4. TOTAL PRODUCTION OF WHEAT FLOUR
AND MILLFEEDS^a, CANADA, 1949-1958

Year	Wheat Flour	Millfeeds	Pounds of Millfeeds Per Pound of Flour
		(thousand cwt.)	
1949	39,045	13,525	.35
1950	41,182	14,511	.35
1951	45,029	16,914	.38
1952	47,244	17,040	.36
1953	43,602	14,740	.34
1954	41,716	13,950	.33
1955	39,629	13,855	.35
1956	39,987	13,909	.35
1957	37,640	12,680	.34
1958	41,193	13,900	.34

a Bran, shorts and middlings.

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, monthly.

5. Flour Mill Prices for Hard Wheat Flour

The average selling prices of flour, by grades, total hard wheat flour, and total wheat flour are given in Table 5. Prices for Patent No. 1 flour, generally used for "all purpose" flour, and to which price spreads presented later in this report are related, moved upwards in 1950 and 1951 and downwards after 1951. The price for Patent No. 2 flour, the flour largely used by bread bakeries, and to which price spreads presented further on in this study are also related, moved downward through the period after 1950. Wheat flour prices for all flours generally declined from 1949 to 1957. This reduction in selling prices took place even though an additional cost of "enrichment" began in 1953.

The miller's cost of all types of wheat, the selling price of millfeeds and of flour per barrel of flour sold, are shown in Table 6.

TABLE 5. AVERAGE SELLING PRICE OF FLOUR BY GRADES,
AT THE FLOUR MILL, CANADA, 1949-1957

Year	Patent No.1	Patent No.2	Patent No.3	Whole Wheat ^a Flour	Total Hard ^b Wheat Flour	Total All Types Of Flour
(dollars per barrel ^c)						
1949	9.79	8.98	9.34	8.89	9.36	9.29
1950	9.88	9.13	9.19	9.05	9.31	9.22
1951	10.02	8.97	9.02	8.89	9.19	9.14
1952	9.77	8.72	8.80	8.71	8.96	8.92
1953	9.77	8.53	8.86	8.60	8.95	8.79
1954	9.39	8.49	8.39	8.28	8.65	8.54
1955	9.33	8.18	7.83	7.94	8.29	8.19
1956	8.65	8.17	8.19	8.05	8.29	8.22
1957	8.86	8.27	8.18	7.81	8.37	8.26

a Whole Wheat and Graham Flour.

b Total of Patents Nos. 1, 2, 3 and Whole Wheat and Graham Flour.

c A barrel of flour weighs 196 pounds.

Source: Dominion Bureau of Statistics, The Flour Milling Industry,
Ottawa, annual.

TABLE 6. FLOUR MILLS' COST OF WHEAT, SELLING PRICE OF
MILLFEEDS AND FLOUR, PER BARREL OF FLOUR SOLD
CANADA, 1949-1957

Year	Cost of Wheat	Selling Price of Millfeeds	Selling Price of Flour
(dollars per barrel of flour)			
1949	9.18	1.75	9.29
1950	9.13	1.89	9.22
1951	9.04	2.04	9.14
1952	8.89	2.06	8.92
1953	8.46	1.64	8.79
1954	8.02	1.47	8.54
1955	7.68	1.57	8.19
1956	7.77	1.53	8.22
1957	7.50	1.41	8.26

Source: Dominion Bureau of Statistics, The Flour Milling Industry,
Ottawa, annual.

The price of wheat as well as the selling price of flour moved downward over the nine years. Millfeed sales offset the cost of milling flour and may thereby cushion the effects of falling flour prices. The selling price of millfeeds moved upwards for each of the years 1949 to 1952, but from 1953 moved downwards. It should be repeated that the market for millfeeds is for livestock feeding. The "cushioning" effect of millfeed sales will depend on competitive conditions in the feed industry.

6. The Effect of Unused Capacity on Flour Mill Production Costs

Unused capacity results in higher costs per barrel of flour produced than if mills are operating at near-capacity. A study by a Royal Commission on Price Spreads, published in 1937, showed that below-capacity production of flour existed in the milling industry following World War I. It was shown previously in this study that the production of flour, millfeeds, and the quantity exported in general, increased from 1949 to 1952, decreased from 1953 to 1957, and then increased during 1958. Quantities available for domestic consumption increased slightly, but prices of both flour and millfeeds decreased over the period. Table 7 illustrates the effect of unused capacity on some costs of the milling industry. Over the period, 1949 to 1957, flour production varied from 62% to 76% of capacity, averaging 70%. Capital, repairs and maintenance expenditures per barrel of flour varied considerably from year to year, but salaries and wages increased continuously after 1950, except for 1956. Increasing mechanization and automation and product differentiation may explain why there has not been more upward pressure on flour prices, particularly from increasing salary and wage costs. It would seem that if flour production is to move significantly towards capacity much depends on exports. As far as the domestic market goes, the increase in population is about offset by the decline in per capita consumption. In an effort to assure themselves of a domestic market for their flour, some larger flour mills have made a considerable investment in the bakery industry. This investment was referred to in an investigation conducted under the Combines Investigation Act¹ in 1931, and by Royal Commissions on Price Spreads and Prices in 1937 and 1948, and has existed over the period covered by this study.

7. Estimation of the Farm-Retail Spread on Wheat Flour

Basic data from the Canada Department of Agriculture were used in estimating the farm to retail price spread for flour.² The

1 Investigation Into An Alleged Combine in the Bread-Baking Industry in Canada, Ottawa, 1931.

2 "Price Spreads and Farmer's Share of the Consumers' Food Dollar", Economic Annalist, Canada Department of Agriculture, Ottawa, August, 1958, pp.93 and 94.

farm value of wheat was based on the domestic wheat price of one bushel of No. 2 Northern, in store Fort William-Port Arthur. The average of weekly prices for each year is used. By-product values and marketing costs from the country elevator to Lakehead storage, such as freight and handling charges and Wheat Board expenses, were deducted to derive the farm value. The retail price of flour is a weighted average price for "all purpose" white flour sold from chain and independent food stores. The milling and wholesale prices are for No. 1 Patent flour. The wholesale price is an average for Toronto and Montreal.

The calculations of price spreads and farmer's share are summarized in Table 8. Wheat and flour prices declined over the period at all levels except wholesale and retail. Retail prices increased each year except for 1955. Wholesale prices advanced to 1953 and declined thereafter, but remained above the 1949 level. The overall spread widened rapidly from 1949 to 1954, decreased slightly in 1955, and increased thereafter.

Marketing charges for wheat as far as the Lakehead increased up to 1953 and then declined to 1949 levels. By-product values increased to 1951 and then declined well below the 1949 figure.

The milling spread and the miller's share of the retail value increased over the decade as a whole. At least part of the widening of the miller's spread can be explained by the increased amount of consumer-size packaging performed. The retail spread increased also, and the wholesale spread more than doubled. Wholesalers do not handle much flour any more compared to chain stores who do their own wholesaling and so it is more meaningful to say that the combined wholesale-retail spread has widened substantially.

8. Production of Bread in the Bread-Baking Industry

Table 9 shows the quantity of hard wheat bread flour and soft wheat cake flour purchased by bakeries reporting to the Dominion Bureau of Statistics and their proportion of the quantity of wheat flour available for domestic consumption. The hard wheat bread flour purchased by the bread baking industry during the period 1949-57 ranged from 47.4% to 52.2% of the wheat flour available for domestic consumption; purchases of soft wheat cake flour ranged from 2.3% to 3.0%. The production of bread by the bread baking industry is shown in Table 10 which shows that production increased from 1949 to 1953, decreased slightly in 1954 and increased from 1955 to 1957, reaching the high point of production for the period in 1957.

TABLE 8. SUMMARY OF FARM-LAKEHEAD-MILL-WHOLESALE-RETAIL SPREADS ON WHEAT-INTO-FLOUR, CANADA, 1949-1958

Calendar Year	Retail ^a		Toronto-Montreal ^b		Milling ^b Equivalent Value of 1 bu. Wheat	Lakehead ^c		Farm ^b Price of Wheat	Farm Value ^e		Farm ^f Retail Spread	Farmer's Share of Retail Value (%)
	Price Flour (\$/lb)	Value of 1 bu. Wheat (\$)	Value of 1 bu. Wheat (\$)	Wholesale Equivalent Value of 1 bu. Wheat (\$)		Price No. 2 Northern (\$/bu.)	Price (\$/bu.)		Of Wheat Less By-Products (\$)	Value (\$)		
1949	7.2	3.06	2.23	2.23	2.12	2.02	1.78	1.50	1.56	1.56	49.0	
1950	7.3	3.10	2.41	2.41	2.14	1.97	1.71	1.41	1.69	1.69	45.5	
1951	7.4	3.14	2.48	2.48	2.17	1.91	1.64	1.33	1.81	1.81	42.4	
1952	7.4	3.14	2.41	2.41	2.12	1.80	1.53	1.23	1.91	1.91	39.2	
1953	7.6	3.23	2.59	2.59	2.12	1.89	1.57	1.31	1.92	1.92	40.6	
1954	7.7	3.27	2.51	2.51	2.04	1.71	1.40	1.15	2.12	2.12	35.2	
1955	7.4	3.14	2.49	2.49	2.02	1.71	1.45	1.20	1.94	1.94	38.2	
1956	7.6	3.23	2.47	2.47	1.88	1.70	1.45	1.21	2.02	2.02	37.5	
1957	7.9	3.36	2.47	2.47	1.92	1.60	1.37	1.15	2.21	2.21	34.2	
1958	8.0	3.40	2.50	2.50	n.a.	1.62	1.39	1.19	2.21	2.21	35.0	

a Weighted average price for "all purpose" white flour.

b Based on 42.5 pounds of flour from one bushel of wheat.

c Basis in store Fort-William-Fort Arthur, domestic sales price.

d Net Farm Value after deduction of freight and handling charges and operating expenses.

e This is farm price of wheat minus value of millfeeds, i.e., bran, shorts and middlings.

f This is the difference between Retail Equivalent Value of wheat and Farm Value of wheat.

TABLE 9. HARD AND SOFT WHEAT FLOURS PURCHASED BY THE BREAD AND OTHER BAKERY PRODUCTS INDUSTRY AND THE QUANTITY OF WHEAT FLOUR AVAILABLE FOR DOMESTIC CONSUMPTION, CANADA, 1949-1957

Year	Purchases of Hard Wheat Flour ^a	Purchases of Soft Wheat Flour ^a	Wheat Flour Available for Domestic Consumption ^b
(Thousand hundredweights)			
1949	9,573	497	20,087
1950	10,149	500	21,418
1951	10,291	582	21,332
1952	10,958	574	21,550
1953	11,250	582	21,600
1954	11,155	670	22,374
1955	11,333	634	22,301
1956	11,925	696	23,037
1957	11,996	603	22,975
(per cent)			
1949	47.7	2.5	100.0
1950	47.4	2.3	100.0
1951	48.2	2.7	100.0
1952	50.8	2.7	100.0
1953	52.1	2.7	100.0
1954	49.3	3.0	100.0
1955	50.8	2.8	100.0
1956	51.8	3.0	100.0
1957	52.2	2.6	100.0

Sources: a Adapted from Dominion Bureau of Statistics, The Bread and Other Bakery Products Industry.

b Dominion Bureau of Statistics Grain Milling Statistics, monthly.

TABLE 10. THE PRODUCTION OF BREAD IN THE BREAD
BAKING INDUSTRY, CANADA, 1949-1957

Year	Bread Production
	(million lbs.)
1949	1,345
1950	1,380
1951	1,417
1952	1,521
1953	1,554
1954	1,523
1955	1,528
1956	1,605
1957	1,651

Source: Dominion Bureau of Statistics The Bread and Other Bakery
Products Industry, Ottawa, annual.

9. Bakery Prices for All Types of Bread

Table 11 summarizes the bakeries' selling prices of bread, the cost of ingredients and cost of hard wheat flour per pound of bread sold. The ingredients are mainly of farm origin. The cost of flour per pound of bread produced decreased slightly over the 9-year period. The cost of other ingredients per pound of bread varied over the period but reached its highest level in 1957. Selling prices for all kinds of bread increased from 9.0¢ per pound in 1949 to 12.0¢ per pound in 1957, an increase of 3¢ per pound or 33.3%

10. Distribution of Bakery Product Sales By Outlet

Table 12 gives the distribution of bakery sales at wholesale and retail. The proportion of wholesale sales increased from 1949 to 1951, then declined slightly until 1957 when it returned to the 1951 level. The proportion of house to house sales decreased from 29.2% in 1949 to 24.3% in 1957. Retail sales from the bakeries' own stores remained relatively constant over the nine-year period at about 18%.

Most bakeries look upon their delivery men as salesmen, as shown by the fact that they get commissions on their sales. The delivery man is the firm's main link with the consumer. In the case of wholesale sales to retail stores, the delivery man not only sells but arranges for display space and gives advice on other selling details.

TABLE 11. BAKERIES' COST OF HARD WHEAT FLOUR, COST OF OTHER INGREDIENTS AND SELLING PRICE PER POUND OF BREAD, CANADA, 1949-1957

Year	Cost of Hard Wheat Bread Flour	Cost of Ingredients	Selling Price of Bread ^a
(cents per pound of bread)			
1949	3.2	1.9	9.0
1950	3.4	2.0	9.5
1951	3.4	2.2	10.5
1952	3.3	1.9	10.6
1953	3.3	1.9	11.0
1954	3.3	2.0	11.4
1955	3.2	2.0	11.4
1956	3.1	2.1	11.6
1957	3.1	2.3	12.0

a Average price for all sorts of bread sold at wholesale and retail.

Source: Dominion Bureau of Statistics, The Bread and Other Bakery Products Industry, Ottawa, annual.

TABLE 12. DISTRIBUTION OF SALES IN THE BREAD AND OTHER BAKERY PRODUCTS INDUSTRY, CANADA, 1949-1957

Year	Wholesale ^a	Retail		Total Sales
		House to House	Own Stores	
1949	52.6	29.2	18.2	100.0
1950	53.6	28.6	17.8	100.0
1951	57.1	24.4	18.5	100.0
1952	56.3	25.5	18.2	100.0
1953	56.8	25.0	18.2	100.0
1954	56.9	24.3	18.8	100.0
1955	56.5	25.7	17.8	100.0
1956	56.3	25.1	18.6	100.0
1957	57.2	24.3	18.5	100.0

a Including sales to restaurants, institutions, etc.

Source: Dominion Bureau of Statistics The Bread and Other Bakery Products Industry, Ottawa, annual.

11. Estimation of the Farm-Flour Mill-
Wholesale-Retail Spreads on Bread

The estimation of the price spread for wheat into bread, as for wheat into flour, uses basic data from the Canada Department of Agriculture. The price spread was calculated on the basis of a bushel of wheat used in making 65.3 pounds of bread. The farm and Lakehead prices of wheat used for the flour price spread calculation were also used in estimating the price spread on bread. The mill price is for No. 2 Patent flour, which is the grade usually bought by the bread bakeries. The wholesale price of bread is an average for Canada. The retail price used is a Canada weighted average price for plain white bread.

The calculations made of the spreads and the farmers' share over the past ten years, are summarized in Table 13.

Farm and flour mill prices declined over the decade of study, but wholesale and retail prices increased significantly. The combined result was an increase of 64.5% in the farm-retail spread on bread. It is clear from Table 13 that the increase took place between the sale of the flour from the mills and the sale to the consumer at retail, which includes bread baking (processing and wholesaling) and retailing. Of these the bakery-wholesale margin increased the fastest.

The farmer's share of the retail price dropped from 23.0% in 1949 to 12.6% in 1958. The retailer's share increased slightly over the period as a whole, and there was a substantial increase in the bakery-wholesale share from 55.1% in 1949 to 67.8% in 1957.

Out of a 24-ounce loaf of sliced white bread which cost 21.1¢ on the average at retail in 1957 the farmer received 2.6¢ for the wheat going into it, the wheat handling etc. costs to the Lakehead accounted for 1.0¢, the flour miller received 0.5¢, the bread bakery-wholesaler received 14.3¢, and the retailer received 2.7¢. Some large bakeries sell bread to chain stores under both chain brands and highly advertised bakery brands. The chain brands then retail at 2¢ to 4¢ a loaf less than either the bakery brand or house delivery.

The main reason for the widening of the farm-retail spread on bread was higher bakery costs, significant among which were labour, packaging, promotional and delivery expenses.

12. Comparison of Canada and United
States Price Spreads for Wheat
Flour and Bread

Canadian and U.S. price spreads cannot validly be compared for a number of reasons, the major reason being that Canadian wheat is sold under a quite different marketing system than is done by the United States. A second basic difference is a difference in the method of calculation. For example, in the case of the price spreads presented

TABLE 13. SUMMARY OF FARM-FLOUR MILL-WHOLESALE RETAIL SPREADS
ON WHEAT INTO BREAD, CANADA, 1949 TO 1958

Calendar Year	Retail Price Bread ^a (\$/lb.)	Retail Equivalent Value of 1 bu. Wheat ^b (\$)	Wholesale Equivalent Value of 1 bu. Wheat (\$)	Flour Mill Equivalent Value of 1 bu. Wheat ^c (\$)	Farm Value of Wheat ^d (\$/bu.)	Farm- Retail Spread (\$)	Farmer's Share of Retail Value (%)
1949	10.0	6.53	5.55	1.95	1.50	5.03	23.0
1950	10.3	6.73	5.94	1.98	1.41	5.32	21.0
1951	11.4	7.44	6.66	1.95	1.33	6.11	17.9
1952	11.8	7.71	6.79	1.89	1.23	6.48	16.0
1953	12.0	7.84	7.05	1.85	1.31	6.53	16.7
1954	12.5	8.16	7.25	1.84	1.15	7.01	14.1
1955	12.5	8.16	7.12	1.78	1.19	6.97	14.6
1956	13.3	8.68	7.44	1.77	1.21	7.47	13.9
1957	14.1	9.21	8.03	1.79	1.15	8.06	12.5
1958	14.5	9.47	8.16	n.a.	1.19	8.28	12.6

a Weighted retail price for plain, white, wrapped and sliced bread.

b Based on 65.3 pounds of bread from 1 bushel of wheat.

c No. 2 Patent flour, 42.5 pound flour from 1 bushel of wheat.

d Canadian Wheat Board price, Fort William-Port Arthur, minus deductions for marketing charges between Lakehead price and net country elevator price and minus by-product values.

in this report, the farm price is a derived one from No. 2 Northern wheat in store, Fort William-Port Arthur. The U.S. farm price is an average price paid to farmers for all wheat. No. 2 Northern wheat, however, is the wheat used in the greatest quantity for bread baking in Canada.

POTATOES

Price Spreads on Potatoes Produced and Sold
in Canada and the Main Marketing Influences Thereon

About half of the farmers in Canada grow potatoes. Although this proportion is impressive, it has been declining over the last decade. Concurrently, the average acreage grown per farmer has been increasing. Potato growing is becoming more specialized and commercialized. In 1956 still only about one acre of potatoes was grown by the average farmer, but the scale of operation ranges from supplying the needs of the farm family at one extreme to giant commercial enterprises at the other.

1. Characteristics of Potatoes Affecting their Price and
Cost of Marketing

Potatoes are farinaceous tubers. Many varieties are grown in Canada, but they are generally grouped as Whites, Reds and Russets. The eastern Canada market is mainly for White potatoes, but an increasing acreage of Russets has been produced in New Brunswick. The Prairie market prefers Reds and Russets. British Columbia produces Whites for the early market and Russets as the main crop. The trend in production has been toward higher yields per acre due to improved varieties, cultural practices, pesticides and fertilizer. Research is being carried on to develop a variety of potato resistant to late blight, a widespread disease.

There is also a trend toward increased mechanization in potato growing. Harvesting may be manual or mechanical. The potatoes are usually hauled in bulk to warehouses for bulk storage. Potatoes are subject to bruising and mechanical injury due to rough handling, particularly in harvesting and grading.

Potatoes are highly perishable unless stored at about 38°F. Temperatures between 32° and 38° cause a transposition of starch to sugar. Temperatures above 38°, on the other hand, hasten respiration and sprouting. Growers without frost-proof storage have to dispose of their crop soon after harvest. Because potato harvesting is concentrated in late summer and because yields per acre vary a lot from year-to-year depending on the weather, controlled-temperature storage is a key factor in marketing. Research has been conducted with some success on chemical and other sprout inhibitors.

The expenses of assembling, storing and distributing potatoes make up the major costs in marketing. New ways of handling potatoes have been developed, such as consumer-size packaging done either at

country shipping points or terminal markets.¹ Wholesaling and retailing are the two main links in the potato distribution chain. In general, preparation is limited to washing, grading and packaging the potatoes for fresh sale. During the last decade, however, an increasing quantity of potatoes has been processed further into prepared, pre-cooked and packaged forms.

2. General Disposition of the Supply

Trends in potato production and in the disposition of the supply over the last decade are summarized in Table 1.

TABLE 1. SUMMARY OF POTATO PRODUCTION, TRADE, PROCESSING AND CONSUMPTION IN CANADA DURING THE DECADE 1948 TO 1957

(Crop-years beginning July 1 of year shown)

	Average 1948-52	Average 1953-57
	(million pounds)	
Production	3,915.2	3,953.5
Imports ^a	112.2	208.0
Exports ^b	454.8	311.8
Used for Seed following year	318.8	295.7
Processed ^c	92.8	177.8
Waste ^d	1,002.3	1,012.1
Fresh Domestic Use	2,158.9	2,364.1

a Minus 6.5% for estimated waste, etc.

b Exports include certified seed.

c Calendar year estimates.

d Culling, shrinking and other waste allowance of 20% of crop, field-run, and another 7% of remaining 80% sold.

Sources: Dominion Bureau of Statistics Quarterly Bulletin of Agricultural Statistics, Ottawa; Trade of Canada, monthly; The Fruit and Vegetable Preparations Industry, annual.

Over the last decade there has been a slight increase in the production of potatoes in Canada, from an average of 3,915.2 million pounds during the five-year period 1948-52 to an average of 3,953.5

1 U.S.D.A. Highlights of Potato Marketing, Agriculture Information Bulletin 114, Washington, 1953, p. 55.

million pounds over the five-year period 1953-57. The estimated amounts of domestic potatoes used for seed have been decreasing both in absolute terms and relative to production. The trend in potato imports over the last ten years has been upward and the trend in exports has been downward. The United States is our major export market, but Canada also exports large amounts of table potatoes to Puerto Rico, Venezuela, Trinidad and British Guiana. Canada exports a large volume of seed potatoes to the United States and smaller amounts to Argentina, Venezuela, Uruguay, and Cuba. Our potato imports come from the United States.

New potatoes are admitted into Canada duty-free between January 1 and June 14. Otherwise, the Canadian tariff is $37\frac{1}{2}$ cents per 100 pounds on potatoes, including seed potatoes. The United States tariff on table potatoes is $37\frac{1}{2}$ cents per 100 pounds for the first 600,000 bushels per year (beginning September 15). For imports in excess of 600,000 bushels the United States tariff is 75 cents per 100 pounds, excepting between December 1 and March 1 when the tariff on imports in excess of 600,000 bushels but not in excess of 1,000,000 bushels is 60 cents. The United States tariff on seed potatoes is $37\frac{1}{2}$ cents per 100 pounds for the first 1,900,000 bushels and 75 cents for imports in excess of that.¹

There has been a sharp increase in the amount of potatoes used in processing over the last ten years; over the last five years potatoes for processing accounted for about 7.5% of the amount of fresh potatoes entering consumption. In addition to being processed increasingly into high-priced products such as potato chips, flakes and french fries, potato starch and flour are used as materials in the food preparations industry, for example bread. The total and per capita consumption of fresh potatoes has been declining and amounted to an average of about 150 pounds per year during 1953-57. There has been a downward trend in the United States also.² United States per capita consumption of processed potatoes, however has increased substantially.³

3. Geographical Pattern of Production, Marketing and Farm Prices

Table 2 contains annual figures of potato production for Canada, with the production by provinces shown as a per cent of the Canada totals, over the decade 1948-57. The sharp drop in production in 1951 was due mainly to the greatly reduced acreage but also to lower yield. In general, however, there was a definite increase in

1 Canada Department of Agriculture, Canada and the United States Tariffs on Selected Agricultural Products, Ottawa 1957, p. 14.

2 U.S.D.A. Supplement for 1956 to Consumption of Food in the United 1909-52, Agriculture Handbook 62, Washington 1957, p. 27 and The National Food Situation, Washington, July 1958, p. 4.

3 U.S.D.A. Potato Flakes A New Form of Dehydrated Mashed Potatoes, Marketing Research Report 186, Washington, July 1957, p. 53.

TABLE 2. POTATO PRODUCTION, CANADA AND PROVINCES^a AS PER CENT OF CANADA, 1948 TO 1957

	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u> (million lb.)	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957^b</u>
CANADA	4,439.5	4,248.0	4,382.5	2,901.3	3,604.3	4,020.1	3,107.0	3,967.6	4,232.5	4,407.7
	(Per Cent of Canada Total)									
P.E.I.	13.6	18.3	14.6	12.3	18.0	15.9	19.6	17.9	16.6	20.5
Nova Scotia	4.4	4.4	4.4	4.2	4.6	4.3	4.8	4.5	3.4	4.0
New Brunswick	20.8	23.9	20.7	19.7	18.3	20.9	19.5	23.5	21.6	20.9
Quebec	25.1	21.7	25.0	26.3	22.9	24.8	22.0	24.5	23.9	26.2
Ontario	20.8	19.2	20.7	20.0	18.8	17.7	18.3	16.2	17.9	16.5
Manitoba	3.5	2.9	3.9	4.6	4.6	4.8	4.5	3.9	4.3	2.4
Saskatchewan	3.1	2.2	2.5	4.0	3.1	2.5	2.0	2.0	2.9	1.7
Alberta	4.2	3.0	4.2	4.9	5.4	4.1	3.7	3.7	5.3	3.2
British Columbia	4.5	4.4	4.0	4.1	4.4	5.1	5.6	3.9	4.2	4.7

^a Excluding Newfoundland for which data are not available.

^b Preliminary.

Sources: Adapted from D.B.S. Quarterly Bulletin of Agricultural Statistics, Ottawa.

potato yields per acre over the last decade, both for Canada as a whole and for the individual provinces. The Maritime provinces have had the highest yields over the decade and the Prairie provinces have had the lowest.

The largest potato-producing province is Quebec. New Brunswick, Ontario and Prince Edward Island rank second, third and fourth in potato production. Production is relatively small in the Prairie provinces and British Columbia. The shares of Quebec, New Brunswick, Manitoba, Alberta and British Columbia in total production did not change materially over the decade. Ontario's, Nova Scotia's and Saskatchewan's shares in total potato production fell, and Prince Edward Island's share increased. As far as seed potatoes are concerned, Prince Edward Island and New Brunswick account for more than 80% of total production.

Although potatoes may be grown almost anywhere there are fairly well-defined commercial producing areas in each province. Prince Edward Island and the Saint John River valley in New Brunswick are the major surplus producing areas in Canada and it is from these two provinces that Quebec and Ontario obtain the bulk of their extra supplies to supplement local production and from which the bulk of Canada's exports originate. Production in Quebec and Ontario is quite widespread, but in Manitoba is confined to the area adjacent to Winnipeg. Saskatchewan has small areas in the vicinity of Regina, and in Alberta the bulk of production is concentrated in the area south of Calgary. In British Columbia there are two main producing areas, one on the Coast and the other in the Interior.

Seasonally the earliest producing areas are southwestern Ontario and coastal areas of British Columbia. Both of the areas make substantial shipments to eastern Canada and the Prairies respectively until local crops mature. Domestic supplies in all areas are usually run down by June 30, and meanwhile the markets are increasingly supplied with imported potato products until the new crops mature in Ontario and British Columbia during the last week of June.

Cash income from the sale of potatoes in Canada accounted for 1.5% of total cash farm income. Among the provinces, potatoes are most important to the agricultural economies of Prince Edward Island and New Brunswick. In Prince Edward Island over the last decade, cash income from potatoes accounted for nearly 28% of total cash farm income.

Generally, farm prices for potatoes over the last decade were highest in British Columbia and lowest in New Brunswick. Farm prices for potatoes were higher in Ontario, Alberta and Saskatchewan than in the Maritimes, Manitoba and Quebec.

4. Inspection, Grading and Marketing Channels

In general, there are three main types of users of potatoes - homes, institutions and processing plants. Increasing pressure is being placed by retailers upon suppliers and producers for a continuous supply of uniformly high-quality potatoes.

Potatoes sold for consumption in inter-provincial trade¹ and for export are required to be inspected and certified. Potatoes may be shipped inter-provincially without inspection and certification if the potatoes have been graded and packed in a "Registered Potato Warehouse".² They may be packed in 10, 15, 25, 50, 75 and 100-pound bags. With the development of self-service retailing, the emphasis has been toward smaller packages. Crates are also permitted, but these are used only for export. Shippers and wholesalers dealing in the inter-provincial and international trade are required to be licenced. There are approximately 850 such licences issued annually of which about 80 are brokers.

When U.S. potato grade standards were raised in 1955, Canadian minimum size standards also had to be raised for the sake of our export trade. But perhaps the most influential change in recent years was the introduction of smaller consumer-size packages. Since the permitted tolerance of grade defects is more apparent in these smaller packages, a more uniform size and quality of product was required.

Grading and packing may be done either by the grower or shipper. If by the grower, he delivers the graded product packed and ready for shipment. If by the shipper, the grower delivers field-run potatoes to a warehouse owned by a shipper who grades and packs and pays the grower on the quantity packed out to grade specifications. The surplus or culls may be hauled back to the farm for feed or in the case of New Brunswick may be sold to a starch factory. In many instances where growers are adjacent to the larger cities and towns they may deliver potatoes direct to the wholesaler or retail chain store, in large or small bags. Some chains buy in the larger containers and re-pack to 10-pound bags.

Storage usually takes place at shipping points although in some seasons and at times dealers may be inclined to purchase heavily in anticipation of a rising market and store on their premises or in public storages at destination markets. Producers having adequate storage space may sell, or hold potatoes for periods varying from a few weeks to eight or nine months depending upon the weather, the type of storage and the market outlook, both domestic and in the United States. The decision is more or less speculative. Usually the period of largest marketings occurs in the autumn following the harvest. The months of largest storage are November, December and January, and the months of smallest storage are July through October.³

1 Excluding potatoes shipped from the Prairie Provinces and Quebec.

2 Canada Department of Agriculture, The Fruit, Vegetables and Honey Act and Regulations, Ottawa 1958, pp. 20-22, 27-29, 33-35, 100-103 and 118.

3 Dominion Bureau of Statistics, Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, annual.

Sales made to wholesalers by shippers may or may not include the services of a broker. If so, a standard confirmation of sale is issued on which is detailed the terms of the contract. The trade is also subject to the Standard Definitions of Trade Terms as outlined on the reverse side of the confirmation of sale. The terms of sale in eastern Canada are "delivered", that is the onus is on the shipper to deliver at the buyer's market a carload or trucklot which will meet the contract. In western Canada the terms are usually "f.o.b." which means the shipper is responsible for placing the potatoes free on board the car or truck in suitable shipping condition and the transit risk is assumed by the buyer.

5. Year-to-Year Variations in Supply and Price

The production and farm and retail prices of potatoes in Canada for the nine crop-years 1949/50 to 1957/58 are presented in Table 3. In order to facilitate comparison, production and prices are also shown in index form in the table. The price is highly sensitive to annual changes in production and supply.¹ The size of the U.S. crop also influences Canadian prices, of course. The 1951 potato crop in Canada, was about 30% smaller than in 1950. By mid-October of 1951, wholesale prices of New Brunswick potatoes in Montreal had doubled their 1950 price. Based on 1949 prices equal to 100, potato price indexes for the 1951/52 season reached 240 at the farm and 168 at retail. Other year-to-year changes in price were less violent over our period of study, but they were not mild either.

The 1950 crop had been very large, and prices low. Towards the latter part of the 1950/51 season, federal assistance was made to the New Brunswick and Prince Edward Island potato marketing boards under the Agricultural Products Co-operative Marketing Act. Over a million bushels of potatoes were diverted by the marketing boards to starch factories.

In 1958, by mid-year, substantial supplies of Prince Edward Island potatoes remained unsold from the 1957 crop. In July, the federal Agricultural Stabilization Board agreed to purchase these unsold potatoes at 36 cents per bushel, that is 60 cents per 100 pounds.

6. The Seasonal Pattern of Price Variability

Mention has already been made of the fact that normally the season of heaviest marketings of domestic potatoes is autumn, especially the months of October and November. Afterwards marketings tend to

1 The economist says that the demand for potatoes is highly "inelastic" with respect to price. It has been estimated that a 1% change in supply results in an inverse change in price of about $3\frac{1}{2}\%$ - U.S.D.A. Bulletin 114, p. 55.

TABLE 3. POTATO PRODUCTION AND RETAIL PRICE,
CANADA, CROP-YEARS^a 1949/50 TO 1957/58

Crop- Year	Production	Weighted Farm ^b Price	Weighted Retail Price ^b No.1,10-lb.	Production	Farm Price	Retail Price
	(million pounds)	(\$/cwt.)	(cents/bag)		(1949/50 = 100)	
1949/ 50	4,248.0	1.53	34.9	100.0	100.0	100.0
1950/ 51	4,382.5	1.30	29.7	103.2	85.0	85.1
1951/ 52	2,901.3	3.67	58.5	68.3	240.0	167.6
1952/ 53	3,604.3	2.75	51.2	84.8	179.7	146.7
1953/ 54	4,020.1	1.25	31.2	94.6	81.7	89.4
1954/ 55	3,107.0	2.52	49.4	73.1	164.7	141.6
1955/ 56	3,967.6	1.80	43.0	93.4	117.7	123.2
1956/ 57	4,232.5	1.93	44.0	99.6	126.1	126.1
1957/ 58	4,407.7	1.75	45.3	103.7	114.4	129.8

a Crop-years for retail price purposes here taken as August 1 to July 30.

b Canada monthly prices prior to 1955/56 weighted by the average monthly pattern of the domestic unloads during the three years 1955-57; from 1955/56 on the actual monthly distribution of unloads in each year was used.

Sources: Adapted from Canada Department of Agriculture Current Review of Agricultural Conditions in Canada, annual Situation issue, and Annual Unload Report, Fresh Fruit and Vegetables Ottawa; and Dominion Bureau of Statistics Prices and Price Indexes Ottawa, monthly.

decrease to February, rise again to a secondary peak in April and then fall to a minimum in June and July. Prices are lowest in autumn when potato marketings are heaviest and highest in summer when marketings fall to a minimum. Prices at the different levels tend to move up or down together from month to month. This pattern of seasonal price variability at both farm and retail is summarized for nine years of the decade of study in Table 4. Generally speaking, when prices are highest seasonally, the farmer's share of the retail price is highest. It is not so true to say that the farmer's share is lowest when prices are lowest, however. The season of lowest farm shares is the months of November through February.

7. Estimating the Farm-Wholesale-Retail Values and Spreads for Potatoes

Because of limitations of information only approximate measurements can be made of the farm-wholesale-retail values and spreads for table potatoes in Canada over the last decade. Several more-or-less arbitrary assumptions had to be made. The calculations involved are summarized in Table 5. The values are computed on the basis of 100 pounds of potatoes sold by the farmer.

D.B.S. publishes monthly urban retail prices of potatoes basis No.1 grade in 10-pounds bags.¹ The Canada monthly prices are based on quotations from 33 cities - a simple average of independent store price quotations and a weighted average of chain store quotations based on fixed city population weights. It was desirable to derive seasonally weighted retail crop-year prices for Canada. This was done by weighting Canada monthly prices by monthly domestic unloads. Monthly unloads are the only figures on marketings available on a systematic basis with which to weight monthly prices. While not complete they do represent a large proportion of the monthly marketings. The unload data are published annually by the Canada Department of Agriculture.² Unfortunately, only from 1955 on have truck as well as rail unloads been recorded. For this reason, the years prior to 1955/56 were weighted by monthly unloads over the three years 1955/57. Subsequent years were weighted by their own monthly unloads.

Wholesale prices are published by D.B.S.³ for eight cities (Halifax, St. John, Montreal, Toronto, Winnipeg, Regina, Calgary, Edmonton, Vancouver) basis No.1 grade in 75-pound bags, but not for Canada. To derive weighted wholesale crop-year for Canada, therefore,

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- 1 Dominion Bureau of Statistics, Prices and Price Indexes, Ottawa, monthly.
 - 2 Canada Department of Agriculture Annual Unload Report, Fresh Fruit and Vegetables on 12 Canadian Markets, Ottawa, annual.
 - 3 Dominion Bureau of Statistics Quarterly Bulletin of Agriculture Statistics, Ottawa (In 1956 Calgary was replaced by Edmonton.)

TABLE 4. MONTHLY PATTERN OF FARM AND RETAIL POTATO PRICES,
CANADA, AVERAGE NINE CROP YEARS^a, 1949/50 - 1957/58

Month	Per cent of annual Retail Price ^b	Per cent of annual Farm Price ^c
August	113.2	123.7
September	91.4	88.6
October	84.1	85.3
November	85.8	82.5
December	90.5	83.9
January	92.7	89.1
February	95.6	91.0
March	95.8	95.7
April	101.0	110.4
May	108.6	100.5
June	113.7	107.6
July	126.4	140.8

a Crop-year taken here as August to July because prices usually reach a maximum in July.

b No. 1 Grade.

c All grades sold.

Sources: Adapted from D.B.S. Prices and Price Indexes, monthly, and
 and Canada Department of Agriculture Annual Unload Reports,
Fresh Fruit and Vegetables, Ottawa.

it was decided to weight monthly city wholesale prices by city unloads,
 and then weight city wholesale crop-year prices by city crop-year un-
 loads.

Farm prices here are average prices received by growers from
 sales of all grades of potatoes. The crop-year used for farm, wholesa-
 le and retail prices is August to July. The highest monthly wholesale
 and retail prices usually came in July, although some new potatoes are
 marketed in that month. Weighted crop-year farm prices were obtained
 by weighting Canada monthly farm prices by the monthly unloads used in
 deriving a weighted Canada retail price.

Waste in potato marketing has sometimes been calculated at

TABLE 5. SUMMARY OF FARM-WHOLESALE-RETAIL SPREADS ON POTATOES^a
CANADA, CROP YEARS^b 1949/50 TO 1957/58

Crop Year	Retail Price ^c (¢/10 lb.)	Retail Value Equivalent of 100 lb. Farm Sale ^d (\$)	Wholesale Value Equivalent of 100 lb. Farm Sale ^e (\$)	Farm Price ^f (\$/100 lb.)	Farm- Retail Spread (\$)	Farmer's Share of Retail Value (%)
1949/50	34.9	3.24	1.87	1.53	1.71	47.2
1950/51	29.7	2.76	1.59	1.30	1.46	47.1
1951/52	58.5	5.44	4.28	3.67	1.77	67.5
1952/53	51.2	4.76	2.95	2.75	2.01	57.8
1953/54	31.2	2.90	1.62	1.25	1.65	43.1
1954/55	49.4	4.59	3.00	2.52	2.07	54.9
1955/56	43.0	4.00	2.45	1.80	2.20	45.0
1956/57	44.0	4.09	2.60	1.93	2.16	47.2
1957/58	45.3	4.21	2.69	1.75	2.46	41.6

a Canada No.1 grade white table potatoes at wholesale and retail but all sales at farm.

b Crop-year August 1 to July 31.

c Canada monthly retail prices prior to 1955/56 weighted by domestic unloads during the three years 1955-57, and yearly thereafter.

d Assuming 7% waste between farm and retail sales.

e Monthly wholesale prices for 8 major cities, prior to 1955/56 weighted by city unloads during 1955-57, and yearly thereafter. Assuming 6% waste between farm and wholesale sales.

f Monthly farm prices prior to 1955/56 weighted by domestic unloads during 1955-57, and yearly thereafter.

Sources: See text.

7%,¹ and at other time at 4.1%.² The United States Department of Agriculture assumes a waste in marketing potatoes at 4.2%.³ It was decided here to assume a waste of 7%, and to attribute it mainly to the farm-to-wholesale stage in marketing. A waste of 6% was allowed for between farm and wholesale sale and a waste of 1% between wholesale and retail sale.

Table 5 clearly shows how in the short crop-year 1951/52 (previously mentioned), potato prices soared at all levels, particularly at the farm. The farmer's share rose in that year to about 68% from 47% in the previous two years. In 1953/54 the farmer's share dropped to 43%. In 1956/57 the farmer's share was back at 47%, where it had been at the beginning of the period. Comparing the first and second halves of the period in Table 5 suggest that the farmer's share has fallen, but this is mainly attributable to the extremely high farm share in the crop-year 1951/52. Over the period as a whole, the farmer's share amounted to about 51%. There was a definite widening of the farm-retail price spread in absolute terms, comparing the second half of the period of study with the first half. The widening took place in both the farm-wholesale and retail components of the farm-retail spread.

The transporter-wholesaler's share (or combined transporter-broker-wholesaler share) amounted to about 11½% of retail value over the period as a whole. The combined share narrowed while the farmer's share widened in the early years of the period, however, and then the share widened as the farmer's share contracted to its initial size. Brokerage was 2-2/3¢ to 4¢ per 100 lb., which would amount to about ¾ of 1% of the retail price.

The retailer's share averaged about 37½% of retail value over the period as a whole, with no definite upward or downward trend discernible. The retailer's share was more stable than either the farmer's or wholesaler's shares.

The reasons for the widening of the farm-retail spread appear to have been higher labour and material costs of packaging, higher transportation costs and constant per cent markups at wholesale and retail on a rising farm price.

1 D.B.S. Handbook of Agricultural Statistics, Part IV, Food Consumption in Canada 1926-55, Reference Paper 25, Ottawa 1958, p. 3.

2 Canada Department of Agriculture price spread data in the Economic Annalist, August 1958, p. 94.

3 U.S.D.A. Farm-Retail Spreads for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington 1957, p. 129.

8. Comparison with the United States

In view of the fact that United States estimates of potato price spreads assumed a waste in marketing of 4.2%, in contrast with our assumption of a 7% waste, the farmer's share in the United States would work out to be smaller than that of the Canadian farmer. Moreover, there are other known and unknown elements of incomparability.¹ Directions of change, if not levels, in the Canadian and United States figures should be comparable, however. With this in mind, we have shown the data on farmer's share for the two countries in Table 6 with waste assumptions for Canada of both 4.2% and 7%. Even if only 4.2% waste is assumed in marketing Canadian potatoes, the Canadian farmer's share of the retail value was usually higher than for his United States counterpart.

TABLE 6. COMPARISON OF FARMER'S SHARE OF RETAIL VALUE OF POTATOES, UNITED STATES AND CANADA, 1949 TO 1957

	United States ^a	Canada ^b	
	4.2% Waste	4.2% Waste	7% Waste
1949/50	47	46	47
1950/51	40	46	47
1951/52	42	65	68
1952/53	51	56	58
1953/54	35	42	43
1954/55	34	53	55
1955/56	34	44	45
1956/57	39	46	47
1957/58	28	40	42

a Calendar years.

b Crop-Years 1949/50 to 1957/58.

Sources: U.S.D.A. Farm-Retail Spreads for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington 1957, pp.41 and 129, The Marketing and Transportation Situation, Washington, January 1958, p. 47 and this study, Table 5.

¹ For example, the U.S. figures are for calendar years and ours are for crop-years.

TOMATOES

1. Characteristics of Tomatoes Affecting Their
Price and Cost of Marketing

Field tomatoes are a highly perishable crop and they must, therefore, be delivered quickly to the processing plant or to the ultimate consumer. Before they reach the ultimate consumer, tomatoes have to be assembled, graded, packed in containers and shipped from the grower to the market or from the grower to the prepackaging plants and then to the retailers. In these operations packaging materials and labour are the most important cost factors. Another important cost factor is waste and spoilage losses which run up to 18% of the quantities handled and approximate in importance the total cost of direct labour. Thus, the care with which tomatoes are handled, both before and after they are placed in appropriate shipping containers, is of great importance in establishing grade.

Tomatoes are sold in various containers. In Ontario the most usual containers are 6-quart baskets containing 10 pounds, and 11-quart baskets containing 17 pounds. Boxes of about 30 pounds are used in Quebec, while the 4-basket crates (20 pounds) and the lugs (30 pounds) are used in British Columbia. Boxes, lugs and 4-basket crates are normally used up to the wholesaler's level. Tomatoes are usually sold to consumers in window-cartons or trays.

According to government regulations¹ field tomatoes are graded as Canada Select, Canada No. 1 and Canada No. 2. Tomatoes meeting the requirements of Canada 2 grade may be marked "Canada Domestic" when packed in baskets or hampers. All graded tomatoes have to be of one variety or similar varietal characteristics, well formed, sound, clean, of uniform state of development and properly packed. Also, hothouse tomatoes grown in British Columbia are subject to similar regulations as field tomatoes. In addition to federal regulations which apply to inter-provincial and export trade, there are also provincial regulations which apply within the province to tomatoes grown for fresh market and for processing purposes.

Alternate Uses

Tomatoes are sold in a greater variety of forms than any other vegetable. Of the total tomato crop about 20% is being marketed as fresh tomatoes and about 80% is used for processing. The most common uses of processed tomatoes are canned tomatoes, tomato juice, catsup, soups, pulp, puree, paste and sauce.

1 Canada Department of Agriculture, The Fruit, Vegetables and Honey Act Regulations, Ottawa, 1957.

2. General Disposition of the Crop

Trends in the total supply and disposition of field tomatoes over the period 1949-58 are summarized in Table 1. After a record high crop of field tomatoes in 1948, the production dropped substantially in two subsequent years but since 1951 the annual production has increased again and remained between 600 and 800 million pounds. The changes in production are caused by the change in the total acreage used for planting and the yield per acre which in turn depends on quality of plants, weather conditions, soil, choice of location, fertilizer practices, cultural factors (such as date for field setting, planting distance, care of plants), and diseases affecting tomatoes.

However, since about 80% of the field tomatoes are used for processing, the primary factor of any eventual change in crop production would be the processor, who usually decides in advance what quantities he will need for processing and signs a contract with the growers accordingly.

3. Geographical Pattern of Production and Marketing

Although the field tomatoes are grown in most regions of Canada, the bulk of the commercial crop is produced in Ontario, Quebec and British Columbia. However, these three provinces are far from being equal in importance. The 10-year average (1949-58) shows that the principal producer is Ontario with 80.4% followed by Quebec, 13.6%, British Columbia, 4.9%, Maritimes, .7% and Manitoba, .3%.

The emergence of Southern Ontario as a principal tomato producer is due, in addition to the proximity of the large population centres, to good soil factors and the favourable climatic conditions. Whereas in many parts of Canada, tomato growing is a side-line activity, in Southern Ontario, and more specifically in Essex and Kent counties, it is an important cash crop.

Tomatoes for Processing

The bulk of field tomatoes for processing is grown on a basis of acreage contract between the individual grower and the purchasing processor. In Ontario and British Columbia minimum prices are established each year by negotiations between the representatives of the producers and the processors, called by provincial marketing boards. In Ontario minimum prices for processing tomatoes are established on a grade basis. The price differential between the highest and the lowest grades varies from \$10 to \$12 a ton. This difference in price is a stimulus to the growers for the production of high quality tomatoes.

The 1949-57 average shows that in Ontario up to 85% of the crop is sold to the processors and in British Columbia and Quebec the proportion is about 80% and 65%, respectively.

TABLE 1. FIELD TOMATOES, SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

Calendar Year	Commercial Production	Self-Supplies	Net Imports	Total Supplies	Exports	Used for Processing	Waste	Available for Domestic Use	Processed as Per Cent of Production (%)
				(thousand pounds)					
1949	536,253	90,300	90,132	716,685	605	427,501	41,647	246,932	80.0
1950	489,031	90,300	89,950	669,281	2,554	365,099	46,193	255,435	75.0
1951	718,131	90,300	94,647	903,078	2,168	581,623	50,199	269,088	81.0
1952	813,313	90,300	108,973	1,012,586	4,131	696,827	44,910	266,718	86.0
1953	653,516	90,300	108,874	852,690	3,933	500,556	55,847	292,354	77.0
1954	569,728	90,300	120,910	780,938	3,251	433,201	51,519	292,967	75.0
1955	698,385	90,300	118,547	907,232	1,554	557,376	52,745	295,557	80.0
1956	607,658	90,300	150,952	848,910	766	514,039	40,149	293,956	85.0
1957	617,727	90,300	131,562	839,589	966	548,064	29,297	261,202	89.0
1958	811,335	90,300	121,866	1,023,501	-	679,836	50,058	293,607	84.0

Source: D.B.S.

Tomatoes for Fresh Market

The available reports¹ for the years 1955-57 indicate that only about 20% of the field tomatoes sold on the fresh market are of Canadian origin. Imported tomatoes are shipped into Canada all year round and only during the summer months, July-September, are the shipments slightly smaller, because at that time the domestic crop is sold in larger quantities. As already mentioned, tomatoes are grown in many parts of Canada and the bulk of the production is usually consumed in the region or province in which it is produced. There are indeed two provinces only that send fresh tomatoes outside their borders. Ontario consumes up to 70% of its production and the remainder is shipped mostly to Quebec and the Maritimes. British Columbia retains for its own use 55% to 60% of the fresh tomatoes and the rest is sold in the Prairie Provinces. Quebec fresh tomatoes find their market almost exclusively inside the province, with very small quantities being shipped to Ottawa.

The three-year average (1955-57) of the shipments of fresh domestic tomatoes on 12 Canadian markets shows that Ontario contributes 65% of the Canadian total followed by British Columbia - 18%, Quebec - 10%, Manitoba - 5% and Maritimes - 2%.

For Toronto, Vancouver and Winnipeg markets domestic fresh tomatoes are transported almost exclusively by trucks. Cities in the Prairie Provinces, other than Winnipeg, get their shipments 100% by rail, and the Maritimes and Quebec use both transportation systems almost in equal proportions. On the whole about 70% of the domestic fresh tomatoes are shipped to the markets by trucks.

4. Year-to-Year Variations in Supply and Prices

Table 2 illustrates the year-to-year variations in total production and prices over the period 1949-58. There have been considerable year-to-year variations in tomato-crop production and in prices, but there appears to be no direct relationship between the variations in the quantities produced and the prices. In comparing the indexes of production and prices which are presented in Table 2, one can see that in 1953 when there was a decrease in the crop production the farm prices went down also, and in 1954, with still further decrease in the production, the farm prices went up. Similar variations in the production as well as in the farm and retail prices could be noted during the whole decade 1949-58. Farm prices seem to depend to a greater extent on the availability of stocks of processed tomato products at the beginning of the season and on the price of imported tomatoes and tomato products than upon domestic tomato production. For example, in 1952, when the crop was the highest during the decade 1949 to 1958, farm prices were also the highest whereas the stock of tomato products in that year was the lowest of the decade. The year-to-year variations in retail prices

1 Canada Department of Agriculture, Annual Unload Report Fresh Fruits and Vegetables on 12 Canadian Markets, Ottawa, Annual.

of canned tomatoes have also been caused more by the availability of stocks than by the size of the crop.

TABLE 2. INDEXES OF TOTAL PRODUCTION, RETAIL PRICES AND FARM PRICES AND STOCKS OF CANNED TOMATOES, CANADA, 1949 TO 1958.

Year	Production	Farm Price	Retail Price	Stocks of Canned Tomatoes on Jan.1
(1949 = 100)				
1949	100.0	100.0	100.0	100.0
1950	91.0	106.0	88.0	119.1
1951	134.0	137.0	115.0	55.5
1952	152.0	151.0	143.0	28.0
1953	122.0	133.0	121.0	100.9
1954	106.0	139.0	107.0	106.8
1955	130.0	132.0	131.0	45.4
1956	113.0	148.0	136.0	56.7
1957	115.0	133.0	145.0	68.1
1958	151.0	n.a.	132.0	69.3

Source: D.B.S. The Fruit and Vegetable Preparations Industry, Annual, Handbook of Agricultural Statistics, Part V, and the Prices Section.

5. Seasonal Variations in Prices

Seasonal variations in wholesale and retail prices for canned tomatoes and retail prices for fresh tomatoes over the decade 1949-58 are shown in Table 3.

Because the farm prices for canning tomatoes are negotiated prices and usually do not change during the season, this has had certain stabilizing effects on the wholesale and the retail prices for processed tomatoes. However, the wholesale prices do show more pronounced variations during the year than the retail prices of canned tomatoes. They are above annual average during the winter months and below the annual average between March and September.

In contrast to prices for processed tomatoes the prices for fresh tomatoes indicate strong seasonal variations at both retail and

TABLE 3. INDEXES OF MONTHLY TOMATO PRICES, CANADA RETAIL, AND ONTARIO F.O.B. FACTORY, WHOLESALE, 1949 TO 1958.

(Annual Averages = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fresh Tomatoes Retail	110	115	113	113	110	109	124	82	53	66	94	110
Canned Tomatoes Retail	100	100	100	100	100	100	100	100	99	98	100	101
Canned Tomatoes Wholesale	103	101	100	99	99	98	98	97	98	100	105	104

Source: D.B.S.

TABLE 4. INDEX OF WEEKLY PATTERN OF WHOLESALE PRICES FOR FRESH TOMATOES, TORONTO, JUNE-OCTOBER, 1950 TO 1957.

(Average of 16 weeks = 100)

	June			July			August			September			October	
	Last week	1st week	2nd week	3rd week	4th week	5th week	1st week	2nd week	3rd week	4th week	1st week	2nd week	3rd week	4th week
Wholesale Prices	280	274	219	209	118	68	55	46	45	42	39	36	41	43
														41

Source: Canada Department of Agriculture, Crop and Seasonal Price Summaries, Annual.

wholesale levels.¹ Especially at the end of June or the beginning of July, when the new crop of field tomatoes enters the market, there is a significant drop in wholesale and retail prices. Table 3 illustrates the changes in retail prices for fresh tomatoes for the whole year and Table 4 shows changes in wholesale prices between June and October, when domestic field tomatoes are marketed. Although Table 4 gives prices for Metropolitan Toronto only, it is quite representative for other Canadian markets.

6. Retail Prices - Selected Cities

There has been a marked difference in the trends of retail prices for fresh and canned tomatoes in major Canadian cities. Between 1952 and 1958 retail prices for fresh tomatoes increased by about 50% in Vancouver, 40% in Toronto and Montreal and 25% in Winnipeg and Halifax. For the same period retail prices for canned tomatoes showed a decrease in all cities mentioned, ranging from about 2% to 12%. The biggest decline in prices occurred in Montreal and the smallest in Halifax.

7. Estimating the Farm-Processor-Retail Spreads for Canned Tomatoes.

Canned tomatoes are the only tomato product for which farm, processor and retail prices are available, thus enabling the measurements of farm-processor-retail spreads and the processor's and farmer's share of retail value.²

In estimating farm-retail spread for canned tomatoes one should keep in mind that the farm price for canning tomatoes is an average price received by the growers for all grades and varieties and the retail price is for choice quality only, consequently, the farmer's share is, to some extent, on the low side.

The summaries of calculations of farm-retail spreads for canned tomatoes are shown in Table 5. In these calculations it was assumed that seven-tenths of canned tomatoes sold to the consumers in any one year come from the previous year's crop and that three-tenths are from the current year's crop.

There have been wide fluctuations in retail and processor prices over the decade. Farm prices have shown smaller fluctuations. The farm-retail spread for canned tomatoes is much more variable than for other canned vegetables. Between 1950 and 1952 it increased from \$94 per ton to \$159 per ton and then decreased sharply for the next two

1 Farm prices for fresh tomatoes not available.

2 While the value of factory sales of tomato juice is higher than for the canned tomatoes, there are no retail and wholesale prices available for tomato juice.

TABLE 5. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED TOMATOES, CANADA, 1949 TO 1958^a

Calendar Year	Retail Price (¢/28-oz. tin)	Processor		Farm Price Calendar Year Basis ^c	Farm-Retail Spread	Processor's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
		Retail Equivalent Value of 1 Ton Fresh ^b	Selling Value Equivalent of 1 Ton Fresh ^b				
		(\$)	(\$)	(\$/ton)	(\$)	(%)	(%)
1949	20.1	135	81	27	108	39.7	20.0
1950	17.7	119	92	25	94	56.1	21.3
1951	23.1	155	118	29	126	57.4	18.5
1952	28.8	194	117	35	159	42.2	18.2
1953	24.4	164	93	36	128	34.7	22.1
1954	21.5	145	122	34	111	61.0	23.3
1955	26.3	177	113	34	143	44.5	19.3
1956	27.3	184	140	34	150	57.4	18.6
1957	29.1	196	117	36	160	41.7	18.3
1958	26.6	179					

^a Price for 28-oz. tin, choice.

^b 1 lb. canned taken as equal to 1.70 lb. fresh.

^c Average price for all grades and varieties going into processing. It is assumed that seven-tenths of canned tomatoes sold to consumers in any one year come from the previous year's tomato crop and three-tenths are from the current year's tomato crop.

Source: D.B.S., Prices Section and The Fruit and Vegetable Preparations Industry, Annual.

years. Over the period under study, processor and retail prices increased, and also, but to a lesser extent, farm prices. The farmer's share increased from 20.0% in 1949 to 23.3% in 1954, but then declined to 18.3% in 1957. The spread widened mainly because of increased processing costs. In addition, canned tomatoes were imported in increasing quantities over the decade, and the spread was widest in the years of heavy imports.

8. Comparisons with the United States

The comparisons of the farmer's share between Canada and the United States over the period 1949-57 are shown in Table 6. Taking into account some differences in conversion factors, the farmer's share in both countries does not differ substantially over the period under study. The farmer's share shows a downward trend in both countries, but in the United States it is more pronounced. Canadian retail prices for canned tomatoes show larger variations from year to year than those in the United States and this explains in part why there are wider year-to-year differences in the farmer's share in Canada than in the United States.

TABLE 6. FARMER'S SHARE ON CANNED TOMATOES, CANADA AND THE UNITED STATES, 1949 TO 1957.

	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(per cent)								
Canada	20	21	19	18	22	23	19	19	18
United States	20	18	16	19	18	16	15	15	16

Sources: United States Department of Agriculture, Farm-Retail Spread for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington, 1957, p. 132, The Marketing and Transportation Situation, Quarterly, and this study, Table 4.

PEAS

The pea plant will grow over a fairly wide range of soil types, but its yield and quality will vary greatly with weather conditions. A cool growing season with frequent rainfall is favourable to the increased production of tender, sweet peas of good colour. Also of great importance is the decision as to when harvesting should begin, because this decision affects the yield and the quality of green peas. The processor is concerned with getting peas of top quality, while the farmer, in addition to that, is also interested in obtaining a large yield in pounds per acre. Pounds per acre are greatest when peas are allowed to ripen to full maturity, but the average quality of peas is higher if peas are harvested before this point. To achieve the optimum result, the very closest co-operation and advance planning between processor and farmer is required. For that purpose a schedule of planting, harvesting and processing is worked out ahead of time. When the desired maturity has been reached, usually the processor's field man calls for the harvesting to begin. Tractor-drawn mowing machines cut the vines, which are then automatically loaded into trucks and driven to the viner. This is a machine which shells the peas. The peas are then loaded in boxes and immediately sent to the processing plant, where they are graded with the help of the "tenderometer".

Peas canned in registered establishments are examined by a Canada Department of Agriculture inspector. The canned peas are graded into Canada "Fancy", Canada "Choice" and Canada "Standard". Each of these grades is usually subdivided into five sizes of pea from No. 1, the smallest, to No. 5, the largest, but they may also be canned unsized.

Over the period under study, the yield per acre was increasing from a low of 1,700 pounds in 1949, to a high of 2,700 pounds in 1957, with an average for the whole period of 2,100 pounds. The years 1957 and 1958 were particularly favourable for high yield and high quality of peas. Of the total canned peas produced in these two years, about 50% were graded as "Fancy", 35% "Choice" and 15% "Standard" and other.

Geographical Distribution

The leading provinces in the production of peas for processing are Ontario, Quebec and British Columbia, but peas for processing are also grown in the Prairies and Maritime Provinces. Over the decade of study, central Canada accounted for 74% of the total contracted acreage, Prairies 12%, British Columbia 10% and the Maritimes 4%. The main areas of contracted acreage are located in western Ontario, the St. Lawrence lowlands in Quebec, the Fraser River valley in British Columbia, the Tabor-Brooks-Lethbridge area in Alberta, the Lake Winnipeg area in Manitoba, the St. John River valley in New Brunswick, and the Annapolis Valley and Pictou County in Nova Scotia.

The contracted acreage increased irregularly from 1949 to a record high in 1955, and then decreased to the end of the decade. On the whole, the contracted acreage for peas for processing has shown an upward trend. The year-to-year variation in contracted acreage was closely related to the stocks of canned peas at the beginning of each year.

It is the practice of firms engaged in processing of peas to sign contracts with growers at an agreed minimum price early each year for the acreages they will require for the season's activities. A major purpose of such contracts is to provide assurance of supply to the processors. This policy of adjusting production has a stabilizing effect on prices, as during the season there are very slight seasonal variations in prices at the farm, processor or retail levels.

Canned Peas

Supply and Disposition

Over the decade 1949-58 the commercial production of green peas showed an upward trend and averaged close to 100 million pounds per year. The quantity used for processing (canning and freezing) represented about 93% of the reported total production. Of the total amount of green peas purchased by the processors, about 80% was used for the production of canned peas. Canned peas are not only the most important of all forms of peas used for consumption, but are also one of the principal canned vegetables. Over the period under study, canned peas alone accounted for more than one-fifth of all canned vegetables in terms of pounds of product.

Table 1 shows the supply and disposition of canned peas over the decade 1949-58. The production of canned peas, which has been increasing over the period under study, has changed significantly from year to year. The changes in production are, to a great extent, influenced by the availability of stocks at the beginning of the year, which in turn influences the size of contracted acreages. For example, the second largest stocks of canned peas at the beginning of 1949 caused the drop in production of canned peas to its lowest level in the decade. Similar inverse relationships can be observed in other years. Also, imports and exports are influenced by stocks and production, but the relationship is not so evident because here a more decisive factor could have been the differences in prices between domestic and foreign canned peas. Over the period as a whole, imports exceeded exports, but not conspicuously. Neither imports nor exports accounted for more than 1% of production. From Table 1 it can also be seen that, over the decade, per capita consumption remained fairly stable and the increase in total domestic disappearance was a result of the increasing population.

TABLE 1. CANNED PEAS, SUPPLY AND DISPOSITION
CANADA, 1949 TO 1958

Calendar Year	Stocks at Jan. 1	Produc- tion	Imports ^a (thousand pounds)	Stocks at Dec. 31	Exports ^a	Apparent Domestic Disappearance Per Total Capita	
						Total	(pounds)
1949	103,193	61,251	-	65,595	1,127	97,722	7.3
1950	65,595	71,273	39	42,520	706	93,681	6.8
1951	42,520	115,024	87	62,475	533	94,623	6.7
1952	62,475	96,395	491	63,392	360	95,609	6.6
1953	63,392	98,225	1,851	67,254	304	95,910	6.5
1954	67,254	100,103	1,695	71,683	449	96,920	6.4
1955	71,683	134,056	1,038	94,894	947	110,936	7.1
1956	94,894	103,589	1,642	85,810	2,164	112,151	7.0
1957	85,810	146,785	1,791	110,394	954	123,038	7.4
1958 ^b	110,394	88,799	499	96,616	969	102,107	6.0

a 16% was deducted from Trade of Canada figures to allow for weight of containers.

b Preliminary.

Source: Adapted from D.B.S., The Fruit and Vegetable Preparations Industry, Ottawa, Annual; Pack of Canned Fruits and Vegetables, Ottawa, Annual; Stocks of Canned Fruits and Vegetables, Ottawa, Quarterly; and Trade of Canada, Ottawa, Annual.

Estimating the Farm-Processor-Retail Price Spreads for Canned Green Peas

The basis of calculation is one ton of peas sold by the farmer for processing. Farm prices are weighted regionally by size of pack to derive the average for Canada. Retail prices are for "Choice" 20-ounce tins of unsized peas. The estimates of farm-processor-retail spreads on canned peas are summarized in Table 2.

Retail prices increased between 1949 and 1953, and then declined, except for 1957. Processor selling prices, in general, followed the pattern of retail prices. Farm prices increased rapidly from 1949 to 1952, and then remained fairly steady, weakening a little. The farm-retail spread increased between 1949 and 1953, and then narrowed to 1956, widening again in 1957. The increase in combined wholesaler-retailer spread was larger than the increase in processor spread.

The farmer's share of the retail value shows a slight upward trend over the period, from 19.3% in 1949, to 20.3% in 1957. The processor's share of the retail value ranged from a high of 67.1% in 1951, to a low of 52.7% in 1955, and averaged 59.6% over the period.

TABLE 2. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED PEAS, CANADA, 1949 TO 1957

Calendar Year	Retail Price ^a (\$/20-oz. can)	Retail Equivalent Value of 1 Ton Farm Sale ^b (\$)	Processor Equivalent Value of 1 Ton Farm Sale ^c (\$)	Farm Price Calendar Year Basis ^d (\$/ton)	Farm-Retail Spread (\$)	Processor's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	17.6	405	316	78	327	58.8	19.3
1950	17.4	400	328	74	326	63.5	18.5
1951	18.8	432	376	86	346	67.1	19.9
1952	20.6	474	394	98	376	62.4	20.7
1953	21.1	485	394	96	389	61.4	19.8
1954	20.9	480	376	96	384	58.3	20.0
1955	20.7	476	348	96	380	52.9	20.2
1956	20.2	464	362	98	366	56.9	21.1
1957	20.6	474	364	96	378	56.5	20.3

^a Retail price for an ungraded, "Choice" 20-ounce tin of peas.

^b Based on 1 lb. fresh = 1.437 lb. canned.

^c Processor's selling price for canned peas of all grades and sizes.

^d Average weighted price for shelled, green peas for processing. It is assumed that 54% of canned peas sold to customers in any one year come from the previous year's pea crop and 46% from the current year's pea crop.

Source: D.B.S., Prices and Price Indexes, Ottawa, Annual; and The Fruit and Vegetable Preparations Industry, Ottawa, Annual.

Frozen Peas

Frozen peas, like other frozen foods, represent a comparatively recent, and certainly a growing outlet, for farm products. Over the period of study, the production of frozen peas increased from 5.4 million pounds in 1949, to 21.2 million pounds in 1958.

Although the process of quick freezing was discovered in 1920, it was not until after World War II that the production reached a plateau in its development and the product found general acceptance.

Frozen peas is a leading product in the whole group of frozen fruits and vegetables. It has accounted for an increasing proportion of the total weight of frozen vegetables, increasing from 50.6% in 1949, to 66.3% in 1957, and averaging over 60% for the period as a whole. Also, per capita consumption of frozen peas has shown a significant increase in the same period. Per capita consumption of all frozen vegetables increased from about 0.5 pounds in 1949, to about 3.5 pounds in 1958, and frozen peas represent the largest volume in the whole group.

The popularity of frozen peas is growing because they are readily preserved in frozen form and maintain the flavour, texture and colour of fresh green peas.

Frozen peas are also used in the production of soups, baby foods, frozen mixed foods and prepared frozen foods.

General Description of Production and Processing

Peas used for freezing are grown under the same conditions of soil and climate as peas used for canning. Although there are different varieties of peas grown in Canada, and those used for canning are not necessarily the best for freezing, there are, however, few varieties which are suitable and are, therefore, used for both canning and freezing.

The processing of peas for freezing involves two separate operations, which often take place in different plants. The first operation, which is a preparation for freezing, is very similar to that of canning. The shelled peas, which have been accepted at the plant, pass through several stages of processing which consist of cleaning, blanching, sometimes grading and sizing, cooling and packaging.

Many different types of containers or packages, as to shape, size and package material, are used. The packages must have low moisture transmission, protection against contamination and attractive appearance. In view of these considerations, packages are usually a costly item.

After this preparatory operation the peas are ready for the final operation, which is freezing. As already mentioned, this can be done either in the same preparation plant, or in a separate plant. It is important, however, that wherever freezing is done it must be done

as quickly as possible in order to avoid quality deterioration. Once frozen, peas have to be stored in cold storage, and when shipped they must be kept in refrigerated railway cars or refrigerated trucks.

Frozen peas are graded as Canada "Fancy" and Canada "Choice". Plants doing the freezing of peas are under the same frequent and regular inspection by the Department of Agriculture as the plants engaged in other processing operations.

Major Producing Areas

Because of the perishability of frozen vegetables, the preparation for freezing and freezing operations have been carried on mostly in the areas of commercial production. In Canada these areas are generally small and widely distributed across the country. In the production of frozen vegetables of which peas make a major part, British Columbia has assumed the leading role, followed by Ontario and Alberta. Frozen vegetables are also produced in Quebec and the Maritimes, but in smaller quantities.

Marketing Problems

The fact that the frozen foods must not be permitted to thaw - even slightly - until they reach the consumer, creates many problems not common to other grocery products. Frozen foods have to be kept in cold storage all the time, and when transported or distributed to retail outlets, they must be delivered in refrigerated trucks. Also, the retail outlets must have freezer storage and cabinet space. Lack or shortage of these facilities makes the distribution of frozen foods costly, if not impossible. Another limiting factor in the rapid development of the Canadian frozen fruit and vegetable preparations industry is the long and thus costly transportation from Canada's main surplus producing areas in British Columbia and Alberta to large population centres in Ontario and Quebec.

In addition to the problems just mentioned, the Canadian frozen fruits and vegetables industry has to face foreign competition. Over the period studied, imports of frozen vegetables showed a great increase from less than half a million pounds in 1949, to over 20 million pounds in 1956, whereas exports remained low.

Estimating the Farm-Retail Spread for Frozen Peas

The summary of calculations of the farm-retail spread on frozen peas is presented in Table 3. The calculation is made on the basis of one ton of peas sold by the farmer for processing. The same price had to be assumed as for canned peas, and this may underestimate the farm price and the farmer's share, and overestimate the farm-retail spread. The validity of general conclusions will not be impaired, however.

Table 3 shows that the retail price for frozen peas declined from 31.5¢ for a 12-ounce package in 1952, to 23.8¢ in 1957. The farm price also declined from \$98 per ton in 1952, to \$94 per ton in 1957,

TABLE 3. SUMMARY OF FARM-RETAIL SPREADS ON FROZEN PEAS,
CANADA, 1952 TO 1957^a

Calendar Year	Retail Price ^b (\$/12-oz. pkg.)	Retail Equivalent Value of 1 Ton Farm Sale ^c (\$)	Farm Price Calendar Year Basis ^d (\$/ton)	Farm- Retail Spread (\$)	Farmer's Share of Retail Value (%)
1952	31.5	747	98	649	13.1
1953	30.8	731	96	635	13.1
1954	27.6	655	96	559	14.7
1955	25.6	607	98	509	16.1
1956	25.2	598	96	502	16.1
1957	23.8	565	94	471	16.6

a Retail prices not available prior to 1952.

b Retail price for "Fancy" quality peas.

c Based on 1 lb. fresh = .89 lb. frozen.

d Average weighted price for shelled, green peas for processing. It is assumed that 63% of frozen peas sold to customers in any one year come from the previous year's crop and 38% from the current year's pea crop.

Source: D.B.S., Prices and Price Indexes, Ottawa, Annual; and The Fruit and Vegetable Preparations Industry, Ottawa, Annual.

but its decline was much less pronounced. Concurrently, the farm-retail spread declined, and the farmer's share increased from 13.1% in 1952, to 16.6% in 1957.

The marked decline in retail prices of frozen peas, in spite of the increase in per capita consumption, is all the more conspicuous in contrast with the increase in retail prices of canned peas. There seem to have been three main reasons for the declining prices of frozen peas: (1) increased domestic production and larger imports; (2) better distribution facilities for frozen foods, and increased freezer space at retail and in the home; and (3) increased competition from other frozen vegetables.

Comparisons with the United States

The estimates of the farm-retail spread on canned and frozen peas indicate that over the period 1949-57 the farmer's share on canned peas in Canada has been consistently higher than in the United States,

whereas on frozen peas the opposite was true until 1954, and since then the farmer's share has been almost the same. Although there are differences between the two countries, in the quality of the product priced, and the size of containers, nevertheless, comparison indicates that certain trends are similar in both countries. Both Canadian and American farm and retail prices for canned peas show an upward trend; however, in Canada it is much more pronounced. Over the whole period, American retail prices for canned peas have been much higher than Canadian prices, whereas farm prices for canned peas were much closer. Between 1952 and 1954, retail prices for frozen peas in Canada were considerably higher than in the United States and the farmer's share lower. Since 1955, however, the prices and trends are fairly close in both countries.

CANNED CORN

Factors Affecting Quantity and Quality of Corn Produced

Sweet corn can be grown on a wide range of soil types. However, a large yield and high quality are entirely dependent on weather and growing conditions. Unfavourable weather, such as frost at the time of planting or harvesting, can affect considerably the yield and quality. Corn will be of high quality when it is ripening at high temperatures with sufficient moisture and when it is harvested at its optimum stage of maturity. Corn that is immature results in a watery pack and, if over-ripe, the kernels become hard and starchy. Sweet corn has been greatly improved for canning purposes since World War II by the development of hybrid varieties. Over the decade under study the yield per planted acre has increased from a low of 4,100 pounds in 1951 to a high of 7,000 pounds in 1958 with an average for the whole period of 5,360 pounds.

Brief Description of the Canning of Sweet Corn

Corn can be consumed in either fresh or processed form. About 90% of the sweet corn produced in the last decade has been processed and the remainder consumed on the farm or sold to the fresh market. Table 1 shows the production of sweet corn, quantities processed and the per cent of quantities processed of the total crop.

Corn is usually picked by a machine harvester. The ears of corn are then transported by truck from the field to the cannery, where the load is weighed and the farmer paid. In a modern plant, the corn passes through the various canning operations by a conveyor system.

At the plant the corn first passes through a husking machine that removes the husks. It is then thoroughly washed and passed over a sorting belt where any stock not suitable for canning is discarded. Husks and trimmings, which make up approximately one-third of the weight of unhusked corn, may be used as feed for livestock. Finally, the cobs pass through a machine cutter, which removes the kernels and makes them ready for ultimate processing.

Corn is usually processed into two main "styles" -- cream style which may be packed in brine solution or homogenized (cremogenized), and whole kernel style, which may be packed in brine or vacuum-packed. There is also a small amount of corn on the cob packed usually four to six cobs per can. The different styles of canned corn are graded into Canada "Fancy", "Choice" and "Standard". The processing plants are under frequent regular inspection by the Canada Department of Agriculture staff who examine the products and check for grade.

The quantity breakdown of the sweet corn pack for the years 1957 and 1958 is shown in Table 2. About 74% of the corn packed in 1957

was graded "Fancy" and 26% "Choice" and "Standard". In 1958, close to 70% was graded "Fancy" and the other grades combined made 30%. Also for 1957 and 1958 there were 107 thousand and 103 thousand cases of all grades which were packed as "corn on cob".

TABLE 1. SWEET CORN USED FOR PROCESSING, THE ESTIMATED PRODUCTION OF SWEET CORN AND THE PERCENTAGE USED FOR PROCESSING, CANADA, 1949-1957

Calendar Year	Quantity Used for Processing (thousand pounds)	Estimated Production	Processed as a Per Cent of Production (%)
1949	291,646	326,402	89.4
1950	184,672	213,108	86.7
1951	185,752	209,307	88.7
1952	232,974	256,709	90.8
1953	172,754	193,894	89.1
1954	203,066	211,608	96.0
1955	243,344	252,820	96.3
1956	189,807	216,422	87.7
1957	279,618	307,201	91.0
1958	n.a.	311,962	-

Sources: D.B.S., The Fruit and Vegetable Preparation Industry, Ottawa, Annual. Handbook of Agricultural Statistics, Part V, Ottawa, 1940-1957, Ottawa, 1958.

Supply and Disposition

Table 3 shows the supply and disposition of canned sweet corn for Canada, over the decade 1949-58. Over the period under study the total production of canned sweet corn changed considerably from year to year. It was the highest in 1949 with 119,012 thousand pounds and the lowest in 1953 with 59,983 thousand pounds. For the decade as a whole, the average annual production was about 80,000 thousand pounds. The variations of the quantities produced are caused by the changes in the contracted acreage for sweet corn which in turn depends on the available stocks at the beginning of the season. More detailed presentation of that relationship is shown in Table 4.

TABLE 2. THE GRADE OF SWEET CORN PACK, QUANTITY PACKED
AS CREAM STYLE CORN AND QUANTITY PACKED AS
WHOLE KERNEL CORN, CANADA, 1957 AND 1958

Year	Style of Pack	Fancy	Choice	Standard	Total
(thousand cases)					
1957	Cream Style Corn	1,608	816	78	2,502
	Whole Kernel Corn	<u>1,347</u>	<u>n.a.^a</u>	<u>n.a.^a</u>	<u>1,471</u>
	Total	2,955	n.a. ^a	n.a. ^a	3,973
1958 ^c	Cream Style Corn	1,099	883	56 ^b	2,038
	Whole Kernel Corn	<u>1,295</u>	<u>112</u>	<u>-</u>	<u>1,407</u>
	Total	2,394	995	56	3,445

a Less than three packing plants reporting choice and standard.

b A small amount of standard is included with the quantity of choice grade packed.

c Preliminary

Source: D.B.S. Pack of Processed Corn (Preliminary), Ottawa, Annual.

From Table 3 it can be seen that during the first half of the decade the imports of canned corn were very low and that during the second half, they increased more than ten times and exceeded exports in the last five years in the relation of five-to-one. The record high imports in 1957 were necessitated by a poor crop in 1956 and below average stocks at the beginning of 1957. The extremely heavy exports in 1951 were due to short supplies of canned corn in the United States during that year.

Table 3 also shows that annual per capita consumption of canned corn remained fairly constant at about 5.0 pounds. The increase of 25.0 % in apparent domestic disappearance that occurred over the decade was hence mainly due to population increase.

The relationship between the stocks of canned corn, contracted acreage and the production of canned corn is shown in Table 4. From that presentation it is evident that available stocks affect significantly the contracted acreage and consequently the pack of canned corn.

TABLE 3. CANNED SWEET CORN, SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

Year	Stocks Jan. 1	Total Production ^a	Imports ^b	Total Supplies ^b (thousand pounds)	Exports ^b	Stocks Dec. 31	Apparent Domestic Disappearance	Per Capita Consumption (lb.)
1949	36,656	119,012	-	155,668	247	89,194	66,227	4.9
1950	89,194	64,921	c	154,115	231	84,970	68,914	5.0
1951	84,970	69,134	35	154,139	14,722	62,534	76,883	5.5
1952	62,534	91,366	39	153,939	296	86,378	67,265	4.7
1953	86,378	59,983	255	146,616	362	70,642	75,612	5.1
1954	70,642	65,249	2,964	138,855	999	61,190	76,666	5.0
1955	61,190	90,215	3,303	154,708	1,317	75,980	77,403	4.9
1956	75,988	61,923	3,638	141,549	781	57,949	82,819	5.2
1957	57,949	96,929	8,632	163,510	607	77,199	85,704	5.2
1958	77,199	82,058	3,605	162,862	716	79,083	83,063	4.9

a Cream style, whole kernel and corn on cob

b Imports and exports, less weight of containers

c Less than 500 pounds

Source: D.B.S. Trade of Canada, Annual. The Fruit and Vegetable Preparations Industry, Annual.

TABLE 4. INDEX NUMBERS OF STOCKS OF CANNED CORN,
CONTRACTED ACREAGE AND PACK, CANADA, 1949-1958

(1949 = 100)

Calendar Year	Stocks of Canned Corn Jan. 1	Contracted Acreage	Production of Canned Corn
1949	100	100	100
1950	244	48	55
1951	232	76	58
1952	171	64	77
1953	236	46	50
1954	193	54	55
1955	167	64	76
1956	208	59	52
1957	159	68	81
1958	211	60	69

Sources: Adapted from D.B.S. Stocks of Canned Fruit and Vegetables,
Ottawa, Annual, Quarterly Bulletin of Agricultural Statistics,
and Fruit and Vegetable Preparations Industry, Annual.

Geographical Distribution of Sweet Corn Production

Sweet corn for canning is grown in all the provinces of Canada. The largest acreage, however, is located in Ontario, followed by Quebec. Smaller acreages are grown in the Prairie Provinces and British Columbia. In particular the irrigated Lethbridge-Tabor-Brooks area in Southern Alberta and the Lake of Winnipeg areas in Manitoba are steadily becoming more important in the production of sweet corn. Only a very small acreage is presently used for growing sweet corn for processing in the Maritime Provinces.

Contracted acreages of sweet corn for canning represent about 85% of the total planted area for sweet corn. The main contracted acreages are located in Western Ontario and the St. Lawrence River Lowlands in Quebec. The average contracted acreage for canning corn, over the period 1949-1958, for Ontario and Quebec was close to 82% of the Canada total. Total contracted acreage varied considerably over the 10-year period, ranging from a low of 29 thousand acres in 1953 to a high of

63 thousand acres in 1949.

It is the usual practice for the processors and growers or their representatives to sign a contract for a specified acreage of sweet corn at a negotiated minimum price, in advance of the planting season. A major purpose of such contracts is to provide assurance of supply to the processors. In Ontario and British Columbia corn is purchased on the basis of a minimum price set by the provincial marketing boards. In other provinces, the price is a matter of negotiation between the processor and the growers.

Seasonal Pattern of Price Variability

There is very little seasonal variation in prices for canned corn at the farm, processing or retail levels. Farm prices are usually negotiated previous to the planting of the season's crop and remain the same throughout the season. Processor prices usually stay at much the same level over the year. The main reason for this is that the contracted acreage and the size of pack is related to the stocks on hand previous to the planting season, and to the increasing population. Retail prices, in general, remain at much the same level over the year.

Estimating the Farm-Processor-Retail Price Spreads for Canned Corn, Canada, 1949-1958.

The estimates of farm-processor-retail spreads on canned corn for the period of study are summarized in Table 5. The price spreads were calculated on the basis of one ton of sweet corn sold by the farmer for canning.

The farm price increased from \$24 a ton in 1949 to \$26 a ton in 1952 and remained unchanged till 1957. The retail price has shown larger year-to-year variations than farm price but over the decade the increase was moderate. Also, annual farm-retail price spreads followed in general the year-to-year pattern of retail prices, ranging from a low of \$87 per ton in 1954 to a high of \$105 per ton in 1957. No upward or downward trend is discernible in the spread, however.

The farmer's share of retail price ranged from a low of 18.0% in 1950 to a high of 23.0% in 1954. In 1957, however, the farmer's share was back at 19.8%, where it had been at the beginning of the period. Over the period as a whole the average farmer's share was 20.7%. The processor's share of the retail price ranged from a low of 47.9% in 1949 to a high of 68.4% in 1951 and averaged 58.9% over the period as a whole.

TABLE 5. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED CORN, CANADA, 1949 TO 1957

Calendar Year	Retail Price ^a (\$/20-oz.can)	Retail Equivalent Value of 1 Ton Farm Sale ^b (\$)	Processor Equivalent Value of 1 Ton Farm Sale ^c (\$)	Farm Price Calendar Year Basis ^d (\$/ton)	Farm-Retail Spread (\$)	Processor's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	19.1	121	82	24	97	47.9	19.8
1950	17.5	111	88	20	91	61.3	18.0
1951	18.4	117	102	22	95	68.4	18.8
1952	19.7	125	94	26	99	54.4	20.8
1953	18.4	117	96	26	91	59.8	22.2
1954	17.9	113	94	26	87	60.2	23.0
1955	19.0	120	94	26	94	56.7	21.7
1956	18.7	118	98	26	92	61.0	22.0
1957	20.7	131	106	26	105	61.1	19.8

^a Retail price for cream style, choice, 20-ounce can of corn

^b Based on 1 lb. canned equals 2.525 lbs. fresh

^c Processor's selling price for canned corn, for all grades and can sizes

^d Average weighted price for sweet corn for processing. It is assumed that 62% of canned corn sold to customers, in any one year, comes from the previous year's crop and 38% from the current year's crop.

Comparison with the United States

Over the period under study the Canadian farmer's share on canned corn was between 2% and 9% higher than that in the United States. However, this comparison does not take into account difference in quality, the size of containers, conversion factors and methods in calculating farm and retail prices in both countries.

FRESH APPLES

Price Spreads for Fresh Apples Grown and Sold
in Canada, and the Main Marketing
Influences Thereon.

1. Characteristics of Fresh Apples Affecting
Their Price and Cost of Marketing.

Apples have certain physical characteristics which have a definite bearing upon their popularity and upon marketing costs and price spreads. The commercial fresh apple is variably small in size and light in weight, being typically two to three inches in diameter. Federal grading regulations for the interprovincial and export trade specify a minimum of $2\frac{1}{4}$ inches and require sizing. The weight typically is three to five ounces.

The shape of the apple varies with the variety and, while being in general aesthetic, is not naturally built to conserve valuable space in marketing. The colour, which also varies with the variety, is important for eye-appeal. Canadians prefer a rosy apple. The Canada Extra Fancy grade of apple calls for 40% - 65% red, the Fancy grade for 15% - 40% red, and the "C" grade for 15% red.

The apple generally has a smooth skin with a natural waxy protective film, but nevertheless, is easily punctured. The apple is shiny if polished, but this removes the protective wax. A good apple is sound and crisp of texture, but the firmness declines with advancing maturity, and the apple is easily bruised by hail or in handling. This is partly because the apple has a high water content (about 84%). Sugar in the apple will cause the punctured flesh to turn brown and attract flies. It may spoil from the inside out, due to air in the core. The apple must have its stem attached. The apple has an appetizing aroma which could easily become contaminated if not carefully packed or stored.

The above characteristics require for the complete protection of apples in marketing a strong, firm, clean and smooth package, with apples inserted under gentle compression so that they will not roll about and bruise. The proper grading and packing of apples, therefore, is a time-consuming and costly process.

The apple is sensitive to warm temperatures, but can be kept several months in cool, humid storage. Storage may be done by the farmer, the distributor or the consumer, but usually it is done by a farmer or his co-operative. Apple storage incurs additional costs when it is regulated at about 33°F. , or when it is sealed in controlled-atmosphere (CO_2). The apple is also subject to shrinkage over time due to dehydration.

There are many varieties of apples. The Canada Fruit and Vegetable Act and Regulations list 77, and 18 are mentioned in the

Department of Agriculture consumer brochures. At least a dozen varieties of apples are produced in quantity in Canada. The varieties are not all easily distinguishable and are not well known by the majority of consumers. Grading regulations normally call for uniform variety, however, and this is both a protection to the consumer and an item of cost in marketing.

The market value of apples can be impaired by natural damage in the orchard (e.g., hail, sunscald, skin puncture, limb rub, insect sting, scab, drought, windfall, etc.). The uniformity, soundness, cleanliness, etc., of fresh apples has been improved by pruning, thinning, fertilizing and spraying the trees, and by other cultural and marketing practices. At least some of these practices add to the cost of a pound of apples. Moreover, the quality of the crop may vary considerably from year to year depending upon weather conditions and the effectiveness of disease and insect control. This means that there are annual variations in the quantity of cull apples available for the manufacture of by-products.

Although the apple has undergone no basic scientific changes recently, eye-appealing improvements have been made in colour and formation. Apple tree rootstocks have been developed that are winter-hardier, and smaller and easier to pick (less labour-intensive). The two broad classes of apples are "dessert" and "cooking". The trend toward less home cooking has tended to reduce the volume of cooking varieties of apples. Although some varieties are equally good for eating raw and for cooking, McIntosh, the variety in largest production, is primarily a dessert apple.

Methods of handling and terms of sale vary widely in eastern Canada. After harvesting, the fruit is stored loose in containers until graded and packed. The grading and storing may be done by individual growers or at warehouses which may be owned by shippers, growers, co-operatives or other organizations. A grower may even sell the fruit on the trees and the buyer (usually a wholesaler) may arrange to have it harvested. Growers may sell individually to wholesalers, retailers or consumers but the vast majority deliver their apples to a shipper or organization for packing through whom sales are made. The grower may be paid the current price if he sells directly to an individual shipper but, if he is a member of a co-operative, he will share equally with other members on the season's return for the variety, grade and size of apples delivered. In such cases he is paid one or more advances during the season pending the final disposition and accounting.

Terms of sale vary depending upon the nature of the transaction. To distant markets the terms are usually f.o.b., but variations may occur, e.g., a wholesaler might send his truck and pick up a load or a shipper might deliver to the buyer's premises. Depending upon the market outlook some dealers may purchase substantial quantities in the autumn and store them themselves. In such instances purchases are usually made direct from growers. If the crop is heavy and the outlook poor, dealers may purchase only in sufficient quantities to meet their immediate requirements.

In common with most other fresh fruits and vegetables the trend is toward consumer-size packages. The susceptibility of apples to bruising, however, has made the transparent plastic bags, commonly used for many other products, of doubtful value as a container. To ensure greater protection a more rigid type of container is desirable such as a small carton or the climax 6-quart basket which has been in use for many years. The cost factor no doubt favours the bag, but to ensure that the consumer receives fruit in good condition, extra careful handling is essential.

The adoption of controlled-atmosphere storage in recent years has prolonged the storage life of the McIntosh variety to as much as three months. Ordinarily this variety is past its prime by the end of February, but in controlled-atmosphere storage it is possible to keep apples in good condition until the end of June. Exposure to room temperature following this prolonged storage period, however, often results in a rapid breakdown and so movement must be expedited. There is also the question here of conflict with other varieties such as Newtown, Delicious, Spy and Winesap which are ordinarily marketed during the latter part of the season.

2. General Disposition of the Crop

Table 1 summarizes the trends in Canadian apple production, in fresh apple exports and imports, and in processing over the last two decades. The first important point is the stability in apple production over the longer run at a level of approximately $14\frac{1}{2}$ million bushels. This has been obscured generally by extreme year-to-year variations, to be examined in a later section.

The long-run trend in apple exports has been downward, however, both in absolute and relative terms. Over the recent five-year period 1953-57, apple exports amounted to only 15.4% of the total crop, compared with 22.6% over the period 1948-52 and 42.3% over the prewar period 1935-39. Exports of apple products have also been declining.

In the pre-World War II period we had a large preferential market for apples in the United Kingdom. World War II abruptly reduced this because of shortages and costs of shipping, etc. The United Kingdom market has not been regained fully since then because of chronic balance-of-payments difficulties in the United Kingdom and increased production there. For two years following the currency crisis of 1952, the United Kingdom imported no Canadian apples.

The United States has become the major export market for Canadian apples. Over the period 1954-56, about 59% of our apple exports went to the United States and about 34% to the United Kingdom, compared with about 48% to each over the period 1949-51. The British West Indies are another important market for our apple exports. British Columbia, Nova Scotia and Ontario are the main apple-exporting provinces. Most of our apple exports to the United States move by rail, but it is interesting to note that many truckloads of British Columbia apples also

move to Los Angeles.¹ The United States tariff on apples is $\frac{1}{4}$ ¢ per pound (11.25¢ per bushel).

Apple imports to Canada have been on an upward trend since 1948, averaging 6.7% of Canadian production in the period 1953-57 compared with 1.8% in the period 1948-52 and 1.5% in the immediate pre-World War II years. Almost all of Canada's apple imports are from the United States and are conspicuous on our markets very early and late in the Canadian apple season. Canada's tariff on imported apples is $\frac{3}{8}$ ¢ per pound (16.8¢ per bushel) effective only for the August 1 to May 19 period of the year.

The proportion of the Canadian apple crop that is processed has been increasing, as shown in Table 1, but not as rapidly as the decline in our net apple exports (i.e., exports minus imports). The difference is explained by the expanding consumption in Canada due to the expanding population.

Over half of the apples for processing in Canada over the last decade have gone into apple juice and concentrate. The next most important uses of apples for processing were canned and dehydrated apple products, apple sauce and pie fill. Most of the apple processing is done in Nova Scotia, British Columbia and Ontario.

TABLE 1. TRENDS IN CANADIAN APPLE PRODUCTION, EXPORTS, IMPORTS AND PROCESSING OVER THE LAST TWO DECADES

	Av. 1935-39	Av. 1948-52	Av. 1953-57
Production (thousand bushels)	14,560	14,674	14,685
Exports as % of production	42.3	22.6	15.4
Imports as % of production	1.5	1.8	6.7
Processed as % of production	n.a.	22.9	28.3

Sources: D.B.S. Quarterly Bulletin of Agricultural Statistics, Canadian Department of Agriculture, Crop and Seasonal Price Summaries, Fresh Fruit and Vegetables, and The Current Review of Agricultural Conditions in Canada.

1 U.S.D.A., Carlot Unloads of Certain Fruits and Vegetables in 100 U.S. and 5 Canadian Cities, also Truck Unloads in 39 U.S. Cities and 5 Canadian Cities, calendar year 1957, Washington, April, 1958.

3. Geographical Influences on Marketing Costs

The main physical requirements for apple growing are a temperate climate and rich, well-drained soil. Inadequate rainfall can be compensated by irrigation. The geographical distribution of apple production in Canada during the last decade is summarized by main producing provinces in Table 2.

TABLE 2. TRENDS IN RELATIVE IMPORTANCE OF MAIN APPLE PRODUCING PROVINCES OVER THE LAST TWO DECADES

	Av. 1935-39		Av. 1948-52		Av. 1953-57	
	(000 bu.)	(%)	(000 bu.)	(%)	(000 bu.)	(%)
British Columbia	5,555	38.1	7,225	49.2	5,872	41.2
Ontario	2,419	16.6	2,903	19.8	3,065	21.5
Quebec	569	3.9	1,923	13.1	2,832	19.9
Nova Scotia	5,874	40.3	2,290	15.6	2,170	15.2
New Brunswick	143	1.0	334	2.3	322	2.3
CANADA	14,560	100.0	14,674	100.0	14,261	100.0

Sources: D.B.S. Quarterly Bulletin of Agricultural Statistics.
Canadian Department of Agriculture, Crop and Seasonal Price
Summaries and The Current Review of Agricultural Conditions in
Canada.

British Columbia is the largest producing province, with most of its apple orchards located in the Okanagan and Kootenay Valleys. British Columbia's proportion of the total apple crop has declined somewhat over the last decade, our period of study. Ontario is the next largest producer, with its apple production spread over southwestern Ontario, including the Georgian Bay area, and also along the St. Lawrence -- roughly from Kingston to Cornwall. Ontario's proportion of the total Canadian apple crop has increased only slightly. Quebec's production now exceeds Nova Scotia's, and is concentrated in several localities fairly close to Montreal. There is a smaller apple growing region near Quebec City. Quebec's proportion of the total crop increased from about 13% over the 1948-52 period to about 20% over the 1953-57 period. Compared with the pre-World War II period, Quebec's apple production has increased dramatically while Nova Scotia's production has sharply declined. Nova Scotia's apple industry was geared to the United Kingdom market. The loss of this market during and since World War II necessitated a drastic reduction and changeover in varieties grown with the

result that production has declined. In Quebec, on the other hand, non-bearing trees constitute about 25% of the tree population, and the potential for increased production within a few years is high.

New Brunswick's production has increased since the 1935-39 period. Nova Scotia's and New Brunswick's proportions of the total apple crop have remained steady over the last decade, however. Nova Scotia's apple industry is in the Annapolis Valley. New Brunswick's output is not large, and is located in the St. John River Valley. There is a very limited production of apples for local use in Prince Edward Island and the Prairie Provinces.

The density of population is the major factor in the geographical distribution of apple consumption. This means that the largest markets are in southern Ontario and Quebec, relatively close to the producing areas in those provinces, but a long and expensive haul from the British Columbia and Nova Scotia producers. The relative distances between the apple-producing and consuming regions in Canada is quite significant for a study of price spreads. The effect on price may not be in simple proportion to the distance of the haul to market. The general explanation of this would be that there are certain overlapping market areas in which the different regional producers compete.

There have been persistent differences among the four main producing provinces in average farm values of apples. Over the 1949-57 period, Quebec, New Brunswick and Ontario had the highest farm values, averaging \$1.39, \$1.39 and \$1.27 per bushel, respectively. Nova Scotia and British Columbia had the lowest farm values of apples, averaging \$.80 and \$.95 per bushel over the 1949-57 period.

4. Year-to-Year Variations in Supply and Price

Canada's sunny temperate climate is well suited to the production of quality apples, but the caprice of weather (particularly hard winter freezes and late spring frosts) causes prominent year-to-year variations in the size of crops. Sometimes the effects last for more than a year.

These fluctuations in supply create many costly problems in the production and marketing of a perishable product like apples. They are probably the major factor in year-to-year changes in apple prices at all links in the marketing chain and hence in price spreads.

If the apple industry were to gear itself fully to marketing bumper crops, then there would normally be excess capacity, which is expensive to maintain. On the other hand, a marketing capacity adequate for only a small crop would frequently result in considerable waste. What results in practice, therefore, is a marketing capacity somewhere in between these two extremes, with the processing branch of the apple industry assigned the accommodating role of economic stabilizer. There is some indication of the processing branch of the industry assuming an increasingly important and independent role.

The impact of supply instability upon apple marketing can be illustrated vividly by reference to the 1955/56 crop year. This was an extremely large crop, the second largest on record. It was the occasion of the sharpest distress to the apple industry during the period under study. It will be shown in a later section of this report that in this year, the price spread reached a maximum, in both absolute and relative terms. The 1955 apple crop amounted to 19,142,000 bushels, an increase of 32% over the year before and 33% over the average production over the previous six years, 1949-54. The average farm value of the 1955 crop was 57¢ per bushel - a drop of 54% from the average value for the 1949-54 period. The size of the 1955 crop would have been enough to cause a sharp fall in price. Unfortunately, there was on hand at the beginning of the 1955/56 crop year an exceptionally large stock of processed apple products, which are to a limited extent substitutes for fresh apples and this must have aggravated the surplus supply situation. Although more apples were exported during the 1955/56 crop year, and fewer apples were imported, these changes by no means compensated for the huge crop and the increased stock of processed apples.

The 1955 apple crop in Quebec doubled over the previous year, but Nova Scotia and Ontario also made substantial contributions to the surplus supply. This raises the question as to what the chances are that a coincidence of exceptionally favourable growing conditions in three (or all) of the four major apple-producing provinces will recur, causing a sharp break in prices. In order to try to qualify the answer to this question, year-to-year changes in production for British Columbia, Ontario, Quebec and Nova Scotia were examined over the 31-year period 1926-57.

In 23 out of the 31 years (i.e., 74%) apple production in three or all of the four major producing provinces changed (up or down) together. Quebec's and Nova Scotia's output is particularly variable. In 13 out of the 31 years (42%), three or all of the four major producing provinces increased their apple output together. This suggests that there is a fair chance of apple prices across Canada dropping sharply one year in every two or three.

Other important factors affecting the year-to-year prices of apples are the level of demand and the supply of competing fruits.¹

5. The Seasonal Pattern of Variability

Within any year, there is a seasonal price pattern for apples caused by harvesting being concentrated in the late summer and early autumn, while consumption is spread out, rather unevenly, over about three-quarters of the year. Usually October is the month of highest marketings and June and July are the months of lowest marketings. Although typically there is not an extended storage of apples on the farm, the growers participate in several instances in co-operative cold stor-

¹ See Ben H. Pubols "Factors Affecting Prices of Apples" in Agricultural Economics Research, published by U.S.D.A., Washington, July, 1954.

age. Sometimes these co-operatives sell to wholesalers and sometimes they act as wholesalers themselves. Considerable storage also takes place in commercial warehouses and packing plants prior to wholesaling. There is a seasonal pattern in wholesale, as well as retail, prices.

By preserving a perishable product, cold storage has increased the length of the apple-consuming season. Controlled-atmosphere storage is further extending the consuming season, with fair prospects of good quality domestic apples being available, for a price, the year around. This may reduce the extremes of the familiar seasonal price pattern, but the costliness of lengthy cold, and controlled-atmosphere storage would, to some extent, perpetuate a seasonal price cycle.

The seasonal price pattern can be illustrated most clearly by reference to D.B.S. retail apple prices of volume sellers. This has been done in Table 3 by months on an average basis over the ten crop years 1949/50 to 1957/58. As might be expected, the lowest seasonal apple prices at retail are in October and November and the highest are in July. Not many Canadian apples have been available for sale during the highest-price months, June to August, but this volume is increasing with the introduction of controlled-atmosphere storage.

The seasonal price pattern at wholesale for domestic apples has been limited to the period, September through May, as far as volume selling is concerned. According to price reporting by the Markets Information Branch of the Canada Department of Agriculture, the minimum wholesale price period varies by variety and market. For example, for Ontario Fancy McIntosh in Toronto the minimum month in recent years has been October, as one might expect, but for the British Columbia Fancy Delicious in Vancouver the minimum has sometimes been January or February and sometimes April. For Quebec Fancy McIntosh at Montreal the minimum wholesale price period is often in November, but it sometimes occurs in other months such as January, February or even April. The late minima are difficult to explain in view of the extra storage costs that must have been incurred.

6. Estimating the Farm-Retail Price Spread for Fresh Apples

The Canada Department of Agriculture does not publish price spreads for fresh apples. There are certain serious gaps in data and elements of incomparability which enable only approximate estimates to be made here.

Dominion Bureau of Statistics retail price data are for 33 cities, and in the case of apples are reported monthly for "volume sellers" and not by variety. Monthly retail apple prices by major cities are available only since July, 1952. Yearly city prices (calendar years) are simple averages of the 12 monthly figures and take no account of the pronounced unevenness seasonally in volume of apple sales. This is important when there is a seasonal variation in prices as great as has been shown to exist for apples.

Farm prices for apples sold commercially are available monthly. These prices are for all grades combined. Retail and farm apple prices,

TABLE 3. MONTHLY RETAIL PRICES OF FRESH APPLES (VOLUME SELLER),
CANADA, CROP YEARS, 1949/50 TO 1957/58

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
	(Cents per Pound)											
1949/50	12.2	9.2	5.6	9.1	8.5	9.2	9.0	9.7	10.0	10.5	11.8	12.9
1950/51	12.5	9.9	6.9	8.8	9.4	10.8	11.2	11.6	12.0	12.1	12.4	13.2
1951/52	13.4	11.9	11.2	9.6	10.1	10.5	11.2	11.6	12.4	13.6	15.0	17.6
1952/53	15.8	12.0	12.0	12.5	13.4	14.0	14.7	15.2	16.0	16.6	17.5	18.9
1953/54	18.3	14.6	13.8	13.5	13.8	14.5	14.4	15.1	16.2	17.1	17.6	18.4
1954/55	18.2	15.7	13.7	13.3	13.9	14.2	14.2	14.8	15.3	16.5	17.9	19.1
1955/56	17.8	14.4	10.4	9.9	10.5	10.9	11.4	11.7	12.7	13.8	15.1	16.0
1956/57	16.8	13.5	12.6	12.6	13.2	13.7	14.0	14.0	14.7	16.5	18.0	20.3
1957/58	18.2	14.7	12.8	12.3	12.9	13.0	13.9	13.9	15.2	17.2	19.9	22.0
Average	15.9	12.9	11.0	11.3	11.7	12.3	12.6	13.1	13.8	14.9	16.1	17.6

Source: D.B.S. Prices and Price Indexes, Monthly.

therefore, are not strictly comparable.

Apple price data at wholesale are the most detailed available, being by province of origin, major city markets, leading varieties, months, and even type of container (box, crate or bushel).

The first step made for the present estimates was to rearrange monthly retail prices from calendar years to crop years (i.e., August to July) for the nine-year period 1949/50 to 1957/58. The next step was to take account of the seasonal pattern in volume of sales. This was done by months on a crop-year basis by weighting monthly retail and farm prices by monthly domestic apple unloads.¹ Since truck unloads were not reported prior to 1955, total monthly rail and truck unloads over the three-year period 1955-57 were used as weights for crop years prior to 1955/56. After that crop-year unloads for each year were used. An allowance of 10% was made for physical waste (spoilage, shrinkage, etc.) in marketing. This is necessarily a somewhat arbitrary allowance. The farm price was then subtracted from the equivalent retail value to get the farm-retail spread in dollars per farm bushel. The farm value was also computed as a per cent of the retail value. A summary of these calculations is presented in Table 4.

According to the price spreads estimates of Table 3, the farm-retail spread on fresh apples reached a maximum in the crop year 1954/55. The absolute margin increased then from \$2.38 per farm bushel in 1949/50 until 1954/55 when it reached \$4.21, after which it receded to \$3.82 in 1955/56 and then returned to \$4.20 in 1957/58. Over the period as a whole, the farm-retail spread widened substantially.

Farm price, expressed as a proportion of equivalent retail value, increased from 32.6% in 1949/50 to a maximum of 35.5% in 1952/53, and then declined to 20.1% in 1955/56 -- a year of extremely large production. The farm share increased to 25.4% of the retail price in 1957/58. The average farm share over the period as a whole was about 30.0%.

The combined packer-transporter-broker-wholesaler share appears to have averaged about 33% , and the retailer's share, about 37%. Systematic data were not available for determining representative shares going separately to packers (shippers), transporters, brokers and wholesalers.

Several influences were at work in widening the farm-retail spread -- longer and more expensive storage (both cold and controlled-atmosphere storage); higher packing-house costs due to increased wages and a multiplicity of containers, several of which are increasingly elaborate; increased freight rates; and more advertising and promotion. Wholesale and retail margins increased.

¹ Unload data drawn from Canada Department of Agriculture Annual Unload Reports, Fresh Fruits and Vegetables.

TABLE 4. SUMMARY OF FARM-RETAIL SPREADS ON FRESH APPLES, CANADA,
CROP YEARS 1949/50 TO 1957/58

Crop Year	Weighted Retail Price (\$/lb.)	Retail Equivalent Value (\$)	Farm Price (\$/bu.)	Farm-Retail Spread (\$)	Farmer's Share of Retail Value (%)
1949/50	8.7	3.53	1.15	2.38	32.6
1950/51	9.9	4.01	1.24	2.77	30.9
1951/52	11.3	4.58	1.43	3.15	31.2
1952/53	13.7	5.55	1.97	3.58	35.5
1953/54	14.7	5.96	2.07	3.89	34.7
1954/55	14.6	5.91	1.70	4.21	28.8
1955/56	11.8	4.78	.96	3.82	20.1
1956/57	13.9	5.63	1.73	3.90	30.7
1957/58	13.9	5.63	1.43	4.20	25.4

Sources: D.B.S. Prices and Price Indexes. Canada Department of Agriculture Annual Unload Reports,
Fresh Fruit and Vegetables, and Crop and Seasonal Price Summaries, Fresh Fruit and
Vegetables.

7. Comparisons with the United States

For comparison, the farmer's shares for apples in Canada and the United States for the years 1949/50 to 1957/58 are shown in Table 5. The apple grower's relative share of the retail price in the United States over the whole period averaged about 43%, contrasted with the Canadian figure estimated at about 30%. In addition to being much lower, the Canadian farmer's share showed considerable variations over the period under study, ranging from a low of 20% to a high of 36%. The main reason for lower Canadian farmer's shares seems to have been much lower prices paid to apple growers in Canada than in the United States.

TABLE 5. COMPARISON OF FARMER'S SHARE OF RETAIL PRICE
FOR APPLES, CANADA AND THE UNITED STATES

	United States ^a	Canada ^b
	(%)	(%)
1949/50	44	33
1950/51	41	31
1951/52	41	31
1952/53	41	36
1953/54	45	35
1954/55	45	29
1955/56	42	20
1956/57	42	31
1957/58	43	25

a July-June. Source: U.S.D.A. Farm-Retail Spreads for Food Products, Misc. Publication 741, Washington, November, 1957, p. 123.

b Aug.-July. Source: This study, Table 4.

STRAWBERRIES

1. Characteristics of Strawberries Affecting their Price and Cost of Marketing

Strawberries have a short season, with harvesting concentrated in June and July. The size of a crop and length of a particular harvesting season vary a lot with the weather conditions. A short harvesting season is not peculiar to strawberries; what makes it so important in this case is the high degree of perishability of the fruit and its vulnerability to weather conditions. The resulting effects upon the quantity and quality of the fruit can cause large year-to-year variations in price. The market price is also highly variable from day to day in response to picking conditions. If bad weather prevents picking one day, then the next day a large supply of berries reaches the market and must be sold at whatever price they can fetch.

Being an urgent and labour-intensive operation, strawberry harvesting requires a large supply of readily available labour. Children are often employed. Payment is by the amount picked.

Over-ripe berries are unattractive to the eye and fragile to the touch. They crush easily, are difficult to hull and clean, and they decay rapidly. Ripe strawberries must, therefore, be carefully hand-picked, marketed in protective containers, and distributed rapidly to avoid costly deterioration. They keep best at temperatures of 32°F. to 40°F. and a relative humidity of 85% to 90%. The mechanics of marketing fresh strawberries has not changed much during the last decade. Usually the fresh fruit is picked into the berry box, where it remains until reaching the consumer. The containers used for strawberries are the quart or six-quart basket in eastern Canada, and the pint box (or hallock) in British Columbia. These boxes in turn are packed for shipment into crates of 12 to 32 quarts, or 12 to 36 pints. The six-quart basket is considered by the housewife to be an economical way of buying strawberries for home preserving. Refrigeration is required for lengthy hauls. When sold fresh on a grade basis, interprovincially or for export, the only grade is Canada No. 1.¹

As far as the channels of marketing fresh strawberries are concerned, what has become increasingly conspicuous are the supermarket chains dealing directly with larger growers.

The alternative to selling strawberries as fresh fruit is to preserve them by processing (freezing, canning or jams). Delivery to the processor is usually made directly by the grower. For processing, the temperature and humidity of the berries remain critical factors. Hulling of the berries may be done manually or mechanically. The

¹ See The Fruit, Vegetables and Honey Act and Regulations, Ottawa.

berries are sorted to eliminate green, soft or mush berries. Sizing then takes place according to grades.¹ The fruit is washed and packed into cans, or into cardboard containers for freezing. The cans then travel along a belt through water at 180°F. for five minutes. This is to exhaust the air so that a vacuum is created when capped, which helps to retain the colour and flavour of the fruit. Hot syrup is added, and the can is sealed. It is then heated for 10 to 12 minutes at 212°F. (for a 20-ounce can). For freezing, on the other hand, a sugar syrup or dry sugar is added to the berries in their cardboard container. They are then frozen at once. In recent years, considerable improvements have been made in mechanical equipment for handling strawberries for freezing.

Strawberries for processing, which are too soft for canning or freezing, are usually made into jam, but for interim storage they may be frozen in pails or barrels or barrelled in a solution of sulphur dioxide. Strawberry jam, therefore, can normally be regarded as a by-product of the processing industry. Some housewives, however, still buy fresh strawberries for making homemade preserves and jams.

The interprovincial and export specifications for containers of fresh strawberries are set by The Fruit, Vegetables and Honey Act and Regulations, and administered by the Fruit and Vegetable Division of the Canada Department of Agriculture. Strawberry processing comes under The Meat and Canned Foods Act and Processed Fruit and Vegetable Regulations.

Enough has been said about the physical hazards and handling of strawberries to show that, whether sold fresh or in processed form, they typically incur substantial costs in production and marketing. This has a direct bearing on prices and the price spread.

2. General Disposition of the Supply

Trends in strawberry production, processing, imports and exports in Canada over the last two decades are summarized in Table 1. In recent years, the production of strawberries in Canada has fallen substantially compared with the beginning years of our 1949-58 period, and to a lesser extent compared with the prewar years 1935-39. The peak production year was 1952.

There are about 80 plants processing strawberries in Canada. Over the last decade about 17.6% of the strawberries used in processing, freezing and canning were imported. On the other hand, a little less than half of the strawberries grown in Canada over the decade as a whole were processed. Data are not available on what proportions of the processed Canadian strawberries were canned and frozen.

¹ "Fancy" grade requires a minimum diameter of 5/8 inch. See The Meat and Canned Foods Act and Processed Fruit and Vegetable Regulations, Ottawa.

TABLE 1. TRENDS IN STRAWBERRY PRODUCTION, SALES TO PROCESSORS, EXPORTS AND IMPORTS, IN CANADA OVER THE LAST TWO DECADES

	Average 1935-39	Average 1949-53	Average 1954-58
Production, thousand quarts	24,493	28,119	21,827
Domestic Sales to Processors, Per Cent of Production	20.9	46.0	49.6
Fresh Exports, Per Cent of Production	12.5	14.7	1.4
Fresh Imports, Per Cent of Production	12.5	13.6	53.5

Source: Canada Department of Agriculture, The Current Review of Agricultural Conditions in Canada, annual Situation issues, and D.B.S., Trade of Canada.

Compared with the years immediately prior to World War II there has been an increase in the amount of strawberries processed, both in absolute terms and relative to domestic strawberry production. Comparing the years 1954-58 with the 1949-53 period, there has also been an increase in the total amount of strawberries processed. During the decade, however, there was a decline in the amount of Canadian strawberries processed, but this was more than offset by an increase in imports for processing. Since domestic sales to processors did not decline as fast as production, they represented an increase of from 46.0% to 49.6% in the proportion of strawberries produced.

Almost all of our strawberry exports go to the United States. In recent years, exports of strawberries have fallen off markedly, from 14.7% of the strawberries produced in the 1949-53 period to 1.4% in the 1954-58 period.

Concurrently, there was over the 1949-58 period, a prominent increase in the amount of fresh strawberries imported into Canada, from an equivalent of about 15% of domestic production in 1949-53, to about 54% in 1954-58. The proportion of strawberries for processing that has been imported has increased rapidly in recent years. All of our imports of fresh strawberries come from the United States. During our period, the tariff on these imports has generally stood at 1-3/5¢ per pound (i.e., 2¢ per quart) during our six-week harvest season, and at 10% ad valorem for the rest of the year.¹ In June, 1957, however, regulations providing for a minimum fair market value of 13½¢ per pound (i.e., 16.9¢ per quart) on fresh imports were introduced under the Customs Tariff Act. This set a minimum cost to the importer of 19¢ per quart at the border. This regulation was cancelled in December, 1957.

1 The United States duty on fresh strawberries is ½¢ per lb., June 15 to Sept. 15, and ¾¢ per lb., Sept. 16 to June 14. Canada Department of Agriculture, Canada and the United States Tariffs on Selected Agricultural Products, Ottawa, Dec. 1957, p. 12.

In addition to the increase in fresh imports, there has been a rapid expansion in recent years in the importation of frozen strawberries. Over the three years 1955-57 the fresh equivalent of the imported frozen strawberries amounted to about 19% of the domestic production of fresh strawberries in those three years. About two-thirds of all frozen strawberries for processing in recent years were imported. Approximately three-quarters of our imports of frozen strawberries came from the United States.

In summary, total Canadian production of strawberries declined over the decade of study, but this has been more than offset by decreased exports and increased imports. Frozen strawberry sales have increased conspicuously over the decade.

3. Geographical Pattern of Strawberry Production

Strawberry acreage figures by provinces are available only for census years. In 1956 the biggest acreages in strawberries were in Ontario, Quebec, and British Columbia, although there also were small acreages in strawberries in all of the other provinces. Norfolk County in Ontario and the lower Fraser Valley in British Columbia are important strawberry-growing regions. In 1956 the total Canadian acreage in strawberries was 15,690, of which Ontario accounted for 38.3%, Quebec 32.4%, and British Columbia 14.5%. Together these three provinces accounted for 85.2% of the total acreage in strawberries in 1956. Comparing these figures with 1951 reveals a decline in the total acreage. Although the Ontario and Quebec acreages increased between 1951 and 1956, both in absolute and relative terms, the British Columbia acreage dropped from 4,001 to 2,266, i.e., by about 43%. This was mainly due to the severe frost in British Columbia in 1956.

Area is not as significant a variable in the case of strawberries as the volume of output, however. There is also the danger that the census years may have been unusual. Table 2 summarizes the geographic pattern of trends in strawberry production by provinces over the last two decades. Being averages, these data do not disclose considerable year-to-year variations in production caused mainly by weather. Perhaps the most prominent example of this during the decade was the drastic drop in British Columbia production in 1956. The effects of the severe frost in 1956 were carried forward into the following season.

The economic importance of strawberries to the farmers of the various provinces can be gauged by comparing cash income from strawberries with total cash farm income. From this point of view, strawberries are more important to British Columbia agriculture than in any other province. Strawberries are the main fruit crop in Prince Edward Island, and are also important to agriculture in Nova Scotia and New Brunswick.

Among provinces, British Columbia, Ontario and Quebec usually process the largest quantities of strawberries. The amounts processed

TABLE 2. TRENDS IN STRAWBERRY PRODUCTION, BY PROVINCES
OVER THE LAST TWO DECADES

Province	Average 1935-39		Average 1949-53		Average 1954-58	
	(thousand qts.)	(%)	(thousand qts.)	(%)	(thousand qts.)	(%)
Ontario	8,297	32.5	8,578	30.5	7,221	33.1
British Columbia	7,766	30.5	11,277	40.1	6,022	27.6
Quebec	7,012	27.5	6,000	21.3	5,830	26.7
Prince Edward Island	-	-	275	1.0	1,087	5.0
New Brunswick	1,330	5.2	1,032	3.7	905	4.1
Nova Scotia	1,088	4.3	957	3.4	761	3.5
Canada	25,493	100.0	28,119	100.0	21,827	100.0

Source: Canada Department of Agriculture, Current Review of Agricultural Conditions in Canada.

by the provinces vary a lot from year to year, but over the last decade British Columbia processed slightly over half of the total for Canada, Ontario about 30% and Quebec about 17%.

Normal processing dates are as follows: British Columbia, June 5 to July 15; Ontario, June 10 to July 15; Maritimes and Quebec, July 10 to July 31. There are distinct differences among the provinces in the proportions of their crops normally processed. Over the last decade British Columbia processed about 63% of its production, Ontario about 42%, and Prince Edward Island about 41%, and Quebec about 31%.

4. Year-to-year Variations in Supply and Price

It has been stated that the declining Canadian production of strawberries in recent years has been more than offset by decreased exports and increased imports. Mention also was made of year-to-year variations in production due mainly to weather. It might be expected that year-to-year variations in supply (production plus net imports) would be reflected in year-to-year changes in the farm price. An attempt was made, therefore, to compare changes in supply and price by constructing for the 1949-58 period annual indexes of the supply of fresh strawberries, and of the average farm price. These are shown in Table 3. (Since data on imports of frozen strawberries are not available prior to 1955, it was not possible to include their fresh equivalent.)

Both indexes exhibit considerable variations from year to year. Although there seems to be a tendency for supply and price to move in opposite directions, as would be expected, this inverse relationship is not invariable, nor is it close.

TABLE 3. INDEXES OF SUPPLY AND FARM PRICE OF FRESH STRAWBERRIES, CANADA, 1949 TO 1958

(1949 = 100)

Year	Supply Index	Price Index
1949	100	100
1950	101	119
1951	116	105
1952	135	90
1953	126	110
1954	141	119
1955	123	124
1956	130	105
1957	136	105
1958		

Source: Adapted from Canada Department of Agriculture, Current Review of Agricultural Conditions in Canada, and Crop and Seasonal Price Summaries, Fresh Fruit and Vegetables, Part I.

The Dominion Bureau of Statistics has published retail prices for frozen strawberries in recent years. Over the last seven years a definite downward drift in this price is discernible, from about 50.1¢ per 15-ounce package in 1952, to about 42.6¢ in 1958. Retail prices are also available for canned "Choice" strawberries for the last 10 years. These prices fluctuated a little from year to year, but with an upward drift apparent, from about 27.8¢ per 15-ounce can in 1949, to about 32.3¢ in 1958. One can speculate as to the probable reasons for the falling trend in frozen strawberry prices and the rising trend in canned strawberry prices. The volume of frozen strawberries has increased rapidly in recent years. Also, increased freezer space in retail outlets and keen competition have exerted a downward pressure on the price of frozen strawberries. In addition, handling and freezing operations have become more mechanized, thereby lowering per unit production costs. In contrast with the expanding supply of frozen strawberries, the pack of canned strawberries is small and stable from year to year.

5. The Seasonal Pattern of Price Variability

Unfortunately, systematic monthly data are not available on the retail prices of fresh strawberries for our 10-year period of study. It is known, however, that the fresh strawberry market in Canada is concentrated in a two-month interval beginning early in June. In the first week or two of this interval, the fresh strawberries are likely to be imports from the United States. It is customary for the retail price to begin from a peak at the beginning of the marketing season and then fall within three weeks to a plateau from which it rises again towards the end of July. This is a customary pattern from which, of

course, there are many deviations.

When D.B.S. retail prices of frozen strawberries were averaged by months over the last seven years, remarkably little seasonal variation was found. The maximum average price of 47.7¢ was for September, and the minimum average price of 46.3¢ was for June. When retail prices of canned strawberries were similarly treated, even less seasonal variability was found. An explanation for the price stability of canned and frozen strawberries lies in the normal pattern of seasonal variation in inventories. These inventories are progressively decreased during the autumn, winter and spring, and are then rebuilt by the new pack during June and July.¹

6. Estimating the Farm-Retail Spread for Canned Strawberries

Retail prices were available for canned strawberries for the years 1949-57 (basis 15-ounce tin of "Choice" grade). For farm-retail comparability, these retail prices were adjusted to give the retail value equivalent of the canned strawberries derived from one quart of fresh strawberries.² By similar treatment, it was possible to derive a comparable processor's selling value. (The strawberry content of the canned strawberries is not, of course, the only cost component in the processor's and retailer's selling prices.) The cost per quart of fresh Canadian strawberries to the processing plants was taken as the basic farm value, but the preceding and current crop prices were weighted to derive calendar-year prices comparable to the retail prices. From these three series estimates could be derived of the farm-retail spread, the processor's spread, the wholesaler-retailer spread, and their shares of the retail value. These calculations are summarized in Table 4. The farm-retail spread on canned strawberries widened moderately over the period as a whole. The farm price rose 3.2¢ per quart over the period. The retail price in the same period rose by 4.4¢ per 15-ounce tin. The widening in the farm-retail spread took place almost entirely in the combined wholesaler-retailer spread (or broker-wholesaler-retailer spread). Sufficient data were not available to enable us to separate the wholesale and retail spreads.

The farmer's share declined slightly and the processor's share increased slightly over the period. The combined wholesaler-retailer share also increased a little. The farmer's share over the period as a whole amounted to about 33.1%; the processor's share amounted to about 43.7%; and the combined wholesaler-retailer share amounted to about 23.2%. When the processor sells through a broker, the brokerage fee amounts to 2½% to 3% of the f.o.b. factory price.

¹ D.B.S., The Fruit and Vegetable Preparations Industry, Annual, and Stocks of Food Commodities in Cold Storage and Other Warehouses, Annual.

² Using Canada Department of Agriculture conversions of 1 lb. canned = .63 lb. fresh, and 1 qt. fresh = 20 oz.

TABLE 4. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED STRAWBERRIES, CANADA, 1949 TO 1957^a

Calendar Year	Retail Price (¢/15-oz. can)	Retail Equivalent Value of 1 qt. Fresh ^a (¢)	Processor Selling Equivalent Value of 1 qt. Fresh (¢)	Farm Value Calendar Year Basis (¢/qt.)	Farm-Retail Spread (¢)	Processor's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	27.8	58.9	47.1	19.3	39.6	47.2	32.8
1950	29.2	61.9	49.9	21.2	40.7	46.4	34.3
1951	29.7	63.0	49.1	23.9	39.1	40.0	37.9
1952	32.1	68.1	44.9	20.8	47.3	35.4	30.5
1953	29.2	61.9	51.9	18.6	43.3	53.8	30.1
1954	32.1	68.1	50.9	20.5	47.6	44.6	30.5
1955	32.3	68.5	49.8	23.0	45.5	39.1	33.6
1956	31.5	66.8	54.6	23.7	43.1	46.3	35.5
1957	32.2	68.3	50.2	22.5	45.8	40.6	32.9

^a 1 lb. canned = .63 lb. fresh, and 1 qt. fresh = 20 oz.

Source: Adapted from D.B.S., The Fruit and Vegetable Preparations Industry, Annual.

7. Estimating the Farm-Retail Spread for Frozen Strawberries

Annual retail prices of frozen strawberries for the 15-ounce package are available from mid-1952 on. In order to estimate the farm-retail spread on frozen strawberries for this period, it was necessary to assume that the farm price of strawberries for freezing was the same as for canning. The results of these calculations are shown in Table 5. In marked contrast with canned strawberries the farm-retail spread on frozen strawberries narrowed substantially over the period. Retail prices declined, while farm prices rose. The farmer's share increased from 22.9% in 1952, to 32.2% in 1957.

The downward drift in the price of frozen strawberries, in contrast with the rising retail price for canned strawberries, requires some explanation. The volume of frozen strawberries has been increasing rapidly. Also, increased freezer space in retail outlets and keen competition have exerted downward pressure on the price of frozen strawberries. In addition, handling and freezing operations have become more mechanized, thereby lowering per unit production costs. In contrast with the expanding supply of frozen strawberries, the pack of canned strawberries is small and stable from year to year.

TABLE 5. SUMMARY OF FARM-RETAIL SPREAD ON FROZEN STRAWBERRIES, CANADA, 1952 TO 1957^a

Calendar Year	Retail Price (¢/15-oz. pkg.)	Retail Equivalent Value of 1 qt. Fresh ^a (¢)	Farm Value Calendar Year Basis (¢/qt.)	Farm- Retail Spread (¢)	Farmer's Share of Retail Value (%)
1952	50.1	78.7	18.0	60.7	22.9
1953	49.7	78.0	18.6	59.4	23.8
1954	48.5	76.1	20.5	55.6	26.9
1955	47.3	74.3	23.0	51.3	31.0
1956	46.8	73.5	23.7	49.8	32.2
1957	44.5	69.9	22.5	47.4	32.2

^a 1 lb. frozen = .85 lb. fresh with stems, and 1 qt. fresh = 20 oz.

Source: Adapted from D.B.S., The Fruit and Vegetable Preparations Industry, Annual, and Prices and Price Indexes.

PEACHES

1. Characteristics of Peaches Affecting their Price and Cost of Marketing

Peaches are among the most perishable of the fruits in Canada and are available for fresh consumption only about two to three months of the year. The bulk, however, of Canadian peaches is harvested in a period of about six weeks. Because of high perishability, peaches must be moved to the market promptly. Also, careful handling and packaging are essential to avoid bruising. There are many varieties of peaches and these are usually grouped into two general classes "clingstone" and "freestone", with the latter predominating. The marketing of fresh peaches includes three major functions - packing, transporting and selling. Packing peaches is a costly process in which materials account for over one-half of the cost, labour over one-fourth, and overhead (which includes depreciation on buildings and equipment, taxes, power, repairs and miscellaneous) for the rest.

When fresh peaches are sold directly out of the orchard to the consumer, then there are no custom packing or transportation costs and the waste is at its minimum. When, however, selling is done through commercial channels, the packers, wholesalers and retailers apply their markups which include an allowance for the risk of spoilage.

Peaches are used in fresh, canned, dried and frozen forms. Of the total peach production, about half is being marketed as fresh peaches and almost half is used for processing and sold as canned peaches. Dried and frozen peaches made their debut in the past few years, but the quantities produced are small.

2. Grading Standards and Inspection

According to government regulations,¹ fresh peaches are graded as Canada Select, Canada No. 1 and Canada No. 2. They have to be of one variety, well formed, uniformly mature and sound, for all grades. In size, the government regulations state, Canada Select must be a minimum of 2-3/8 inches in diameter or a box count of 60, Canada No. 1 must have a 2-inch minimum or a box count of 90, and Canada No. 2 also a box count of 90.

¹ Canada Department of Agriculture, The Fruit, Vegetables and Honey Act and Regulations, Ottawa, 1957.

3. Supply and Disposition

Trends in fresh peach production and the disposition of the total supply over the decade 1949-58 are summarized in Table 1. Although there have been considerable changes in the production of peaches from year to year, the trend in peach production has been upwards for several decades and this can be seen in comparing the following periods: 1935-39 - 1,023,000 bushels; 1945-49 - 1,833,000 bushels; 1950-54 - 2,250,000 bushels and 1955-58 - 2,618,000 bushels.

Also per capita consumption of fresh peaches has shown a significant increase over the past decade, 1949-58. The imports which by far outweigh the exports, depend greatly on the domestic crop. Over the last decade, the quantities imported have varied greatly from year to year.

Table 2 summarizes the production, disposition and consumption of canned peaches over the decade 1949-58. The commercial production of canned peaches shows a pattern similar to that for total production of peaches. It will be of interest to note that the imports of canned peaches show a considerable increase in the past few years despite the increased domestic production and the larger stocks of canned peaches.

4. Geographical Pattern of Production and Marketing

The production of peaches in Canada is confined practically to two provinces only and more specifically to two small parts of Ontario and British Columbia. In Ontario, The Niagara Peninsula and Essex-Kent counties are the main peach producing districts and, in British Columbia, the Southern Okanagan Valley, which accounts for close to 100% of the production of peaches in that province. Besides these two principal areas which are entirely suitable for the production of peach crops, there is a small area of production in the Annapolis Valley, Nova Scotia, but its production is negligible in comparison with Ontario and British Columbia.

The number of peach trees in Ontario has declined over the years since 1921 and in British Columbia there has been a steady increase. The importance of British Columbia in terms of peach trees increased from 5.7% in 1921 to 16.2% in 1956. In terms of production, British Columbia accounted for 20% of the Canadian total and Ontario 80% during the decade 1949 to 1958.

The canning of peaches is carried on in both Ontario and British Columbia. The main varieties are Jubilee, Elberta, and the V-types. These are all freestone peaches. In the years 1949-53 there were considerable changes in proportion of peaches used for processing, but since 1954 there has been evident stabilization in the trend of processing. On the whole, over 50% of Ontario peaches and about 35% of

TABLE 1. FRESH PEACHES, TOTAL SUPPLY AND DISPOSITION, CANADA, 1949 To 1958

Year	Total Produc- tion	Imports	Total Supply	Exports	Proces- sed	Available	Per Capita Consumption (Fresh) (pounds)
						for Domestic Use ^a	
(thousand bushels)							
1949	2,011	1	2,012	3	1,153	856	2.5
1950	1,222	349	1,571	1	861	709	2.0
1951	1,792	349	2,141	53	1,095	993	3.2
1952	2,917	338	3,255	11	909	2,335	6.5
1953	2,893	371	3,264	30	971	2,263	6.3
1954	2,425	498	2,923	16	1,214	1,693	4.9
1955	2,883	256	3,139	63	1,511	1,595	4.5
1956	1,667	799	2,466	9	829	1,628	3.7
1957	2,801	424	3,225	35	1,426	1,764	4.7
1958	3,043	533	3,576	16	1,235	2,325	5.5

^a Waste not deducted.

Source: Department of Agriculture, Seasonal Price Summaries, annual.

TABLE 2. CANNED PEACHES, SUMMARY OF SUPPLY, DISPOSITION AND CONSUMPTION, CANADA, 1949 TO 1958

						Avail-	Per Capita
	Commercial	Stocks				able	Consump-
Year	Production	Jan. 1	Dec. 31	Exports	Imports	Supplies	tion
				(thousand pounds)			(Canned)
							(pounds)
1949	46,875	26,213	35,194	47	5,047	42,894	3.2
1950	39,143	35,194	30,579	34	7,801	51,525	3.7
1951	51,253	30,579	47,271	34	14,173	48,700	3.5
1952	39,493	47,271	45,650	67	7,844	48,891	3.4
1953	39,199	45,650	35,237	41	9,206	58,777	4.0
1954	52,340	35,237	37,712	817	10,197	59,245	3.9
1955	66,455	37,712	52,089	2,454	9,171	58,795	3.8
1956	39,133	52,089	34,516	882	12,286	68,110	4.1
1957	58,591	34,516	54,960	251	19,057	56,953	3.4
1958	56,036	54,960	54,181	284	18,356	72,367	4.2

Source: D.B.S.

of British Columbia peaches have been commercially processed. For Canada as a whole the 1949-58 average is 50%.

Marketing and Prices

In British Columbia marketing of all fresh peaches is done through B.C. Tree Fruits Ltd. which acts as the central sales agency for the whole regulated area. It sells one part of the crop to canners and processors and the remainder to wholesalers and chain stores for the fresh fruit market. B.C. Tree Fruits sets a price for peaches going for processing and the same price is charged to each canner. The British Columbia growers get an average price for each grade and variety of peaches, irrespective of where these were used, for fresh fruit market or the cannery market.

In Ontario, however, there are two marketing boards, one for peaches that go for processing and the other for peaches sold to the fresh market. The growers selling peaches to these two different markets gets different prices. The minimum price of peaches for processing is negotiated each season under the Ontario Peach Growers' Marketing Board between the representatives of growers and processors. The established minimum price is announced by the Board and usually maintained during the whole season. Since 1954 fresh peaches have been marketed under the Fresh Peach Growers' Marketing Board and through its selling agency, the Ontario Fresh Peach Growers' Co-operative. Prior to 1954, there was no overall marketing organization. The prices for fresh peaches change during the season, depending upon market conditions.

Sales of canned peaches in Canada are made directly by the canners to wholesalers, brokers and chain stores. The price of canned peaches is not regulated.

The most important market for the Niagara Peninsula fresh peaches is Ontario which takes approximately 60% of the whole crop. Next in importance is Quebec and then follow the Maritimes, Manitoba and Saskatchewan. In Ontario itself, Metropolitan Toronto takes over 50% of the total.

Okanagan Valley fresh peaches find their most important markets in British Columbia and Alberta. Saskatchewan purchases about 70% of British Columbia peaches and 30% of Ontario peaches. Usually Manitoba gets the bulk of peach shipments from British Columbia, but in some years it takes up to 50% from Ontario.

Methods of Transporting Fresh Peaches

The available figures for Canada for the years 1955-57¹ show that up to 60% of fresh peaches were transported by rail and about 40%

1 Canada Department of Agriculture, Annual Unload Report, Fresh Fruit and Vegetables on 12 Canadian Markets.

by truck. Practically all peaches are shipped to Metropolitan Toronto by truck. Vancouver gets up to 85% of shipments by truck and all other cities get the bulk of shipments by rail. Generally the distance to market is one of the main factors determining the means used to haul peaches to their destinations.

5. Year-to-Year Variations in Supply and Prices

Farm and retail prices of peaches are closely connected with the quantities produced. With a large crop the farm prices drop immediately and with a poor crop farm prices go up. The retail prices for canned peaches do follow a similar trend but with a time lag. For example, because of a poor crop in 1956 farm prices reacted immediately upwards but the retail prices increased noticeably only at the beginning of 1957. Over the decade 1949-58 farm prices showed considerable fluctuations, whereas retail prices for canned peaches maintained much greater stability. These changes in prices and production are shown in Table 3.

Because the peach producing regions are located in two widely separated provinces, they are not always affected by the same adverse weather conditions and in view of that, the farm prices will sometimes show different fluctuations in each province. On the whole, Ontario farm prices were higher than British Columbia (except for 1950, 1951 and 1958) and showed greater stability over the period under study. Table 4 shows farm prices for peaches in Ontario and British Columbia.

6. Seasonal Pattern of Price Variation

In analyzing the seasonal pattern of price variation of peaches one has to take them into two separate groups: canned peaches and fresh peaches.

Canned Peaches

There are practically no seasonal variations in price for canned peaches at either farm, wholesale or retail levels. Farm prices for peaches going into processing are negotiated and announced at the beginning of the crop and they usually stay, unchanged for the whole season. Also, the retail and wholesale prices usually stay at the same level for most part of the year. The major changes occur after the arrival of a new stock. If the crop is poor, the prices will rise and stay at approximately the same level till the next crop; if the crop is large they will drop.

TABLE 3. INDEXES OF PEACH PRODUCTION, AVERAGE FARM AND RETAIL PRICES, CANADA, 1949 TO 1958

(1949 = 100)

Year	Production	Farm Price	Retail Price	Processor Price
1949	100.0	100.0	100.0	100.0
1950	60.5	103.4	97.9	107.5
1951	89.5	102.3	105.3	114.0
1952	145.6	80.7	104.3	100.0
1953	143.9	87.5	96.8	100.0
1954	121.1	98.9	98.9	114.0
1955	143.9	96.6	102.1	107.5
1956	83.3	120.5	103.2	135.5
1957	139.5	102.3	114.9	121.5
1958	151.8	81.8	108.5	n.a.

Source: Adapted from Crop and Seasonal Price Summaries, Canada Department of Agriculture, and D.B.S. sources.

TABLE 4. AVERAGE FARM PRICES FOR PEACHES, ONTARIO AND BRITISH COLUMBIA, 1949 TO 1958

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	(dollars per bushel)									
Ontario	2.18	2.18	2.13	1.85	1.94	2.16	2.21	2.72	2.33	1.75
British Columbia	2.15	3.13	2.56	1.41	1.80	2.04	1.73	2.19	1.74	1.92

Source: Canada Department of Agriculture, Crop and Seasonal Price Summaries, annual.

Fresh Peaches

The prices for peaches going to fresh market do show well pronounced seasonal variations at all three levels, farm, wholesale and retail. They are highest at the beginning and end of the season, July and October, and are lowest at the end of August and the beginning of September. However, the growers in British Columbia do not feel immediately the changes in prices during the season because they sell their crop through the B.C. Tree Fruits and are paid an average price for the whole crop.

7. Estimating the Price Spreads for Canned and Fresh Peaches

Farm-Processor-Retail Spreads on Canned Peaches, Canada, 1949 to 1957

These estimates are based on national averages and are subject to variation when applied to specific place, time, quality or size of container. The farm and processor prices used are average prices for all grades, varieties and sizes of containers, while the retail prices are for the choice 15-ounce can. In view of this, the farmer's share as shown in these estimates is slightly on the low side.

Although there have been year-to-year changes in prices, the overall relationship between the farm, processor and retail prices did not change much over the decade as a whole. The farmer's share showed only a slight upward trend and the difference between the highest and the lowest share was less than 2% over the whole period. The farm-retail spread, which up to 1956 was increasing very slowly, in 1957 showed a considerable increase. On the average the farmer's share of the retail value was about 21%, the processor's share about 48% and the wholesale-retail share combined about 31%. The estimates of farm-processor-retail spreads on canned peaches are shown in Table 5.

Farm-Wholesale-Retail Spreads on Fresh Peaches, Toronto, 1957

National estimates of the farm-retail spread on fresh peaches could not be made for lack of a continuous series of retail prices. The figures presented in Table 6 were adapted from the brief submitted by the Government of Ontario. As the data presented cover the Toronto area only during the 1957 season, the conclusions drawn would not necessarily be true for the whole decade and for the entire country. The present study includes adjustments for waste which were not mentioned in the brief; therefore, the farmer's share and the price spread as shown in this study differ from those presented in the brief. Table 6 shows that the farm, wholesale and retail prices change in the same direction but not in the same proportion. Of the three sets of prices, wholesale prices show the smallest and farm prices the largest seasonal variations. Although the farm-retail spread is larger when marketings are light and smaller when marketings are heavy, the wholesaler's margins do not move in the same direction. The wholesaler's markups are the highest during the heaviest marketings and the smallest at the beginning and the end

TABLE 5. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED PEACHES,
CANADA, 1949 TO 1957^a

Calendar Year	Retail Price ^a (¢/15-oz. can)	Retail Equivalent Value of 1 lb. Fresh ^b (¢)	Processor Equivalent Value of 1 lb. Fresh ^b (¢)	Farm Value Calendar Year Basis ^c (¢/lb.)	Farm Retail Spread (¢)	Processor's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	20.7	21.6	13.8	4.6	17.0	42.6	21.3
1950	20.3	21.2	14.8	4.5	16.7	48.6	21.2
1951	21.8	22.8	15.4	4.6	18.2	47.4	20.2
1952	21.6	22.6	14.1	4.6	18.0	42.0	20.4
1953	20.2	21.1	14.0	4.5	16.6	45.0	21.3
1954	20.5	21.4	15.2	4.5	16.9	50.0	21.0
1955	21.2	22.2	15.1	4.7	17.5	46.8	21.1
1956	21.5	22.5	18.1	4.9	17.6	58.7	21.8
1957	23.8	24.9	17.0	5.2	19.7	47.4	20.9

a Price for 15-oz. tin, choice quality.

b 1 lb. canned = 1.02 lb. fresh.

c Average price for all varieties of peaches going for processing. It is assumed that 7/10 of canned peaches sold to consumers in any one year come from the previous year's peach crop and 3/10 are from the current year's peach crop.

TABLE 6. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS OF FRESH PEACHES,
TORONTO, AUGUST 2/57 TO SEPTEMBER 27/57

	Retail Price (Chain Stores)	Toronto				Farm Wholesale Spread	Wholesale -Retail Spread	Farmer's Share of Retail Equivalent Value
		Retail Equivalent Value ^a	F.O.B. Equivalent Value	Farm Net Price	(£/lb.)			
	(£/ lb.)	(£)	(£)	(£/lb.)	(£)	(£)	(%)	
Aug. 2	11.44	10.49	8.60	5.17	3.43	1.89	49.0	
Aug. 9	12.31	11.29	9.17	5.47	3.70	2.12	48.0	
Aug. 16	11.63	10.66	8.42	4.58	3.84	2.24	43.0	
Aug. 23	10.03	9.19	7.87	4.01	3.86	1.32	44.0	
Aug. 30	9.97	9.14	7.82	3.78	4.04	1.32	41.0	
Sept. 6	9.91	9.08	8.17	3.99	4.18	.91	44.0	
Sept. 13	10.77	9.87	8.13	4.28	3.85	1.74	43.0	
Sept. 20	11.05	10.13	8.92	4.90	4.02	1.21	48.0	
Sept. 27	11.12	10.19	8.34	5.00	3.34	1.85	49.0	
Yearly Average	10.54	9.67	8.20	4.24	3.96	1.47	44.0	

a Assuming 9% waste between farm and wholesale sales.

Source: Adapted from the brief presented by the Government of Ontario, Proceedings, Vol. 16, p. 2672, Table 4.

of the season. The retailer's markups and the farmer's share are highest at the beginning and lowest in the middle of the season. The estimates for 1957 show that on the average the farmer's share was 44%, the wholesaler's and the retailer's shares 41% and 15% respectively.

8. Comparisons with the United States

The United States Department of Agriculture publishes the price spreads for canned peaches only and in view of that comparisons can only be made with that kind of Canadian peaches. However, there is a difference in the types of canned peaches between Canada and the United States. American processed peaches are both "clingstone" and "freestone" with the former predominating, while Canadian are "freestone". These types give different yields in processing, which in turn brings a different farmer's share. Taking into account all differences in the types of peaches, conversion rates, size of the production and marketing, we will find, however, that the farmer's share of the retail equivalent value in both countries is, by and large, similar in trend and in proportion.

TABLE 7. COMPARISONS OF FARMER'S SHARE OF RETAIL
EQUIVALENT VALUE OF CANNED PEACHES,
UNITED STATES AND CANADA, 1948 TO 1957

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
U.S.A.	17	17	16	19	20	17	16	18	21	18
Canada	20	21	21	20	20	21	21	21	22	21

Source: U.S.D.A., Farm-Retail Spreads for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington, 1957, p. 131; and this study, Table 5.

SUGAR BEETS

1. Characteristics of Sugar Beets and Beet Sugar
Affecting Their Price and Cost of Marketing

Sugar beets are a root crop with a sugar content varying somewhat from year to year, depending mainly on the weather. The range of sugar content is unlikely to exceed 13 to 20% over the years. Although all of the sugar cannot be extracted commercially, it is obvious that the seasonal variations in sugar content affect annual refining costs per pound of sugar. The beet sugar refining companies tie their price paid for sugar beets both to the current price of refined sugar and to the average sugar content of that year's crop of sugar beets.

The culture of sugar beets also affects beet sugar yields, and the refining companies make certain detailed specifications in their contracts with the individual growers. The terms of the contract vary between producing provinces and over time, but, for example, the contract states the grower's acreage and requires the grower to use seed purchased from the company, and may specify that the land must be fertilized or that the land must not have been planted to sugar beets the year before. Beets judged by the company to be unsuitable for making sugar may be rejected.

Sugar beets are a perishable commodity and in ordinary farm storage they are subject to damage by shrinking, freezing etc. In such adverse circumstances the contract permits the grower to silo undelivered beets for their protection. Ordinarily, however, the grower can silo only a limited proportion of his beets and only upon permission and instructions from the company. The company pays the grower extra for siloed beets, but also takes silo shrinkage into account. The grower bears the costs of delivering the sugar beets. When delivered the beets must be clean or else the grower suffers deductions. The perishability of sugar beets necessitates processing without delay before heavy frost, and then the refineries stand idle as far as refining is concerned for more than two-thirds of the year. Also large stocks of beet sugar have to be stored for part of the year.

The grower receives an initial payment upon delivery of his sugar beets, and the balance subsequently when the company knows what its "net returns" are from the sale of sugar made from that year's crop. In Manitoba and Ontario in recent years, the sugar companies have offered to pay a bonus when the total tonnage of sugar beets exceeded certain amounts. In Manitoba there has also been a bonus when average purity exceeded 83% clarity.

Molasses and beet pulp are by-products of the refining process. The sugar beet grower is paid extra for these by-products, again in relation to the next return received by the company from their sale. The beet pulp is used as a feed for livestock. It should also

be mentioned that the beet tops which are removed by the grower before delivery may be used by him on the farm for feed.

All beet sugar when refined is the white granulated kind. Refined sugar is not a highly perishable product, but it is subject to damage and loss from moisture, torn sacs, dirt, etc.

2. General Disposition of the Supply

Trends in the amount of sugar refined in Canada, and in the proportions refined from imported raw cane sugar and from domestic sugar beets over the last two decades, are summarized in Table 1. The long-run upward trend in sugar production is clearly shown in the table. Also, the proportion of sugar refined from domestic sugar beets has been substantially greater in the post World War II period than in the 1935-39 period. Over our 1949-58 period of study, total inventories of refined sugar increased considerably, compared with World War II years, and exceeded the amounts of beet sugar produced.

TABLE 1. TRENDS IN SUGAR PRODUCTION OVER THE LAST TWO DECADES IN CANADA BY AMOUNTS REFINED AND PROPORTIONS REFINED FROM IMPORTED RAW CANE SUGAR AND FROM DOMESTIC SUGAR BEETS

	Average 1935-39	Average 1949-53	Average 1954-58
Total Refined (000 lb.)	1,057,582	1,398,977	1,554,825
Made from Cane	86.6%	81.1%	82.6%
Made from Beets	13.4%	18.9%	17.4%

Source: D.B.S., The Sugar Refining Industry, annual.

The amount of refined sugar imported over the 1949-58 period amounted to less than 1% of total sugar refined in Canada. Exports of refined sugar also were less than 1% of the sugar refined in Canada over the period of study.

The tariff on refined sugar imports is \$1.89 per 100 lbs., which is approximately 20% of the retail price of refined sugar in Canada in recent years. The British Preferential tariff on raw sugar averages 28.7¢ per 100 lbs., and the Most Favoured Nation and General Tariff averages \$1.29 per 100 lbs.¹

1 Canada Department of Agriculture Marketing Services, Canada and the United States Tariffs on Selected Agricultural Products, Ottawa, Revised Dec. 1957, p. 16. Although there is no British Preferential tariff on sugar beets, there is an M.F.N. tariff on sugar beets of 27½% ad valorem.

3. Geographical Pattern of Sugar Beet Production

Traditionally, sugar beets have been a labour-intensive crop, but mechanization is well under way, (blocking, thinning, weeding, cultivation, and harvesting). Nearly all of Alberta's beets are now harvested by machine. Sugar beet growing calls for a deep rich soil, a requirement which influences the geographical pattern of production. Beet sugar production costs exceed those of cane sugar. Beet sugar yields per acre are lower than cane and yet labour costs, land values and taxes are higher. The competition from cane sugar is keenest in eastern Canada where markets are more accessible to West Indies exports. Some measure of tariff protection for the beet sugar industry is accorded. The two World Wars, which disrupted the cane sugar trade, provided a special stimulus to beet sugar production.

Sugar beets are a crop of special importance in certain localities in Canada. Sugar beet growing began in Quebec in the 18th century, but it has not achieved great prominence in that province. The present Quebec Sugar Refinery was set up at St. Hilaire in 1944. Early in the 20th century, beet sugar refineries were built in Ontario. The two Ontario refineries now existing are at Wallaceburg and Chatham, both owned by the Canada and Dominion Sugar Company. Beet sugar production began in Alberta about 33 years ago, and in Manitoba about 10 years ago. In Alberta, the sugar beets are grown on irrigated land in the Lethbridge district. The three beet sugar refineries in Alberta are located at Raymond, Picture Butte and Tabor, all three plants being owned by Canadian Sugar Factories Ltd. The Manitoba refinery is at Fort Garry, Winnipeg, and is owned by the Manitoba Sugar Company.

The trends in sugar beet production in Canada and for the four producing provinces over the last two decades are summarized in Table 2. Canada has produced an annual average of 1,055,519 tons of sugar beets over the five-year period 1954-58, compared with an average of 972,649 tons during 1949-53 and 504,200 tons during 1935-39.

TABLE 2. TRENDS IN SUGAR BEET PRODUCTION IN CANADA, AND FOR THE PRODUCING PROVINCES, OVER THE LAST TWO DECADES

	Av.1935-39		Av.1949-53		Av.1954-58	
	(tons)	(%)	(tons)	(%)	(tons)	(%)
Alberta	219,200	43.5	404,883	41.6	486,274	46.1
Ontario	285,000	56.5	327,491	33.7	283,401	26.9
Manitoba	n.a.	n.a.	148,248	15.2	217,197	20.6
Quebec	n.a.	n.a.	92,027	9.5	68,047	6.4
Canada	504,200	100.0	972,649	100.0	1,055,519	100.0

Source: D.B.S., Handbook of Agricultural Statistics, Part I, Field Crops, and Supplement to Part I.
Quarterly Bulletin of Agricultural Statistics, Jan.- Mar., 1958.

Table 2 shows that Alberta has been the major sugar beet producer, and its relative importance increased significantly over the decade 1949-58 (from 41.6% to 46.1% of total Canadian production). Ontario is the second largest sugar beet producing province, but its production actually declined over the decade of study, and its share has been declining prominently over the longer run (from 56.5% during 1935-39 to 33.7% during 1949-53 to 26.9% during 1954-58). Apparently, more remunerative cash crops can be grown in Ontario. Manitoba is in third place in sugar beet production, but its share has increased substantially over the period of study (from 15.2% during 1949-53 to 20.6% during 1954-58). Quebec's production and share of sugar beets, like that of Ontario, declined over the 1949-58 period. In summary, increasing sugar beet production in the western provinces (Alberta and Manitoba) is more than offsetting the declining production in the eastern provinces (Ontario and Quebec).

The numbers of sugar beet growers in the four producing provinces and Canada in 1956 are shown in Table 3. The table also shows the marked differences between the eastern and western provinces in acres of sugar beets per grower, tons of beets produced per grower and average receipts from the sale of sugar beets.

TABLE 3. NUMBERS OF SUGAR BEET GROWERS AND THEIR AVERAGE ACREAGE, PRODUCTION AND INCOME, CANADA AND PRODUCING PROVINCES, 1956

	Beet growers	Acres per Grower	Tons of Beets Per Grower	Receipts Per Grower (\$)
Quebec	1217	4.7	45.1	676
Ontario	1492	9.5	97.0	1,478
Manitoba	784	29.1	292.1	4,919
Alberta	1280	28.2	362.8	6,709
Canada	4774	16.5	187.1	3,242

4. Year-to-Year Variations in Supply and Price

In the longer run, sugar price levels in Canada are set by the price of raw cane sugar in the world market, plus our tariffs on imports, plus refining costs and costs of domestic distribution. The price of sugar in Canada, in turn, contractually influences (but does not completely determine) the price received by growers for their sugar beets. The relevant price for contract purposes is the "net return" to the refining company from their sugar shipments after deducting selling expenses (e.g. freight, discounts, storage, brokerage, shipping costs and losses, sales, salaries and travelling, insurance, advertising etc.)

The production of refined sugar in Canada over the 1949-1958 period has been subject to variations about a rising trend line. Some

measure of stability in sugar prices has been imparted, however, by compensatory inventory adjustments.

Percentage changes from year to year in imports and exports of refined sugar have been great but, because the level of imports and exports is so low, it is unlikely that this has had much influence, either a stabilizing or de-stabilizing kind, upon sugar prices.

The year-to-year changes in sugar production in Canada have not been large relative to the level of production, however. As indicated in section 2, about 82% of this production is from imported raw cane sugar and, relatively speaking, the production of refined cane sugar has been much more stable than beet sugar production. The instability in beet sugar production is the joint result of year-to-year variations in sugar beet acreages, sugar beet yields per acre, and the yields of refined sugar per ton of beets.

5. The Seasonal Pattern of Price Variability

Within the years of our decade of study, no seasonal pattern of retail prices is discernible. Retail sugar prices for month to month are very stable. The month-to-month stability of retail sugar prices is in marked contrast to the seasonal variability in sugar sales and inventories. Table 4 shows retail sugar prices and refinery stocks and sales of sugar, averaged for each month of the nine-year period 1949-57. Domestic sales of sugar by refineries are highest during the summer months June-September and are lowest in January and February. During the fourth quarter of the year sugar inventories of refineries, which reach a minimum by the beginning of October, are rebuilt. This is partly due to a

TABLE 4. SEASONAL PATTERN OF RETAIL SUGAR PRICES AND REFINERY SALES AND INVENTORIES IN CANADA, OVER THE NINE YEARS, 1949-1957

	Jan.	Feb.	Mar.	Apr.	May	June
Av. Retail Price (¢/lb.)	10.4	10.5	10.5	10.5	10.4	10.4
Av. Domestic Sales (million lb.)	90.7	89.3	103.3	101.6	113.7	143.2
Av. Stocks ^a	301.7	277.1	262.0	230.9	206.9	210.7
	July	Aug.	Sept.	Oct.	Nov.	Dec.
Av. Retail Price (¢/lb.)	10.4	10.4	10.5	10.4	10.4	10.5
Av. Domestic Sales (million lb.)	156.3	146.0	147.2	123.5	120.5	97.5
Av. Stocks ^a (million lb.)	191.1	133.6	116.5	96.3	189.0	290.4

^a At beginning of the month.

Source: D.B.S. Prices and Price Indexes, Monthly and Quarterly Bulletin of Agricultural Statistics Jan.-Mar., 1950-58.

declining volume of domestic sales and partly due to the refining during the fourth quarter of the current crop of sugar beets. Inventories decline from January through September due to expanding domestic sales, but only during August-September do sales normally exceed stocks.

6. Estimating Farm-Refinery-Retail Spreads for Sugar Beets into Sugar

The results of calculations of the farm retail spread on sugar beets for the prairie region are summarized in Table 5. Both sugar beet production and beet sugar consumption are distinctive (although not exclusive) features of the Prairie region of Canada, and so sugar beet price spread calculations for this region are more valid and reliable than for other regions or for Canada as a whole. The calculation is based on a year-to-year comparison of the farm price of a ton of sugar beets, less the farm value of by-products, and the refinery and retail values of the amount of sugar refined each year from a ton of beets.

Over the period of study as a whole the trend in the farm-retail spread on a ton of sugar beets in the prairie region has been downward. The spread increased from \$15.56 in 1949/50 to a maximum of \$21.00 in 1952/53, and then declined to a minimum of \$14.18 in 1954/55. The spread increased again over the next two years and decreased in 1957/58.

The sugar beet grower's share of the retail price in the prairie region averaged 45.5% over the period as a whole, being highest in 1951/52 (47.1%) and 1956/57 (47.0%), and lowest in 1952/53 (42.1%). No upward or downward trend in the grower's share was discernible. The refiner's share of the retail price increased slightly over this period of study and averaged 36.7%. A combined share of 17.8% is, therefore, left for the wholesaler and retailer.

7. Comparison with the United States

The Canadian sugar beet grower's share of the retail price over the last decade corresponded closely with United States figures, as shown in Table 6. The U.S. beet grower's share averaged 45.2% over the nine years 1949-50 to 1957-58 compared with an average Canadian figures of 45.5% for the same period.

TABLE 5. SUMMARY OF FARM-REFINERY-RETAIL SPREADS ON SUGAR BEETS INTO SUGAR,
PRAIRIE REGION, CROP YEARS, 1949/50 to 1957/58

Crop Year	Retail Price Sugara (\$/lb.)	Retail Equivalent Value of 1 Ton Beetsb (\$)	Refinery Equivalent Value of 1 Ton Beets (\$)	Farm Price ^d (\$/ton)	Farm Value of Beets Less By-Products ^e (\$/ton)	Farm-Retail Spread ^f (\$)	Refiner's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949/50	11.4	28.63	23.73	13.29	13.07	15.56	37.2	45.7
1950/51	13.9	37.31	28.50	17.32	16.96	20.35	30.9	45.5
1951/52	14.0	32.10	25.68	15.71	15.11	16.99	32.9	47.1
1952/53	12.3	36.29	29.59	15.53	15.29	21.00	39.4	42.1
1953/54	11.3	30.45	25.28	13.78	13.43	17.02	38.9	44.1
1954/55	10.8	26.60	22.81	12.71	12.42	14.18	39.1	46.7
1955/56	10.9	30.49	26.15	14.47	14.13	16.36	39.4	46.3
1956/57	13.3	37.32	31.34	17.93	17.55	19.77	37.0	47.0
1957/58	12.2	28.99	23.26	13.27	12.98	16.01	35.5	44.8

a Weighted price of white granulated sugar, sold in 5-pound bags in 5 major prairie cities.

b Retail price weighted by the average yield of refined sugar from a ton of beets. The yield of refined sugar changes from year to year.

c Prairie refiner's price of beet sugar weighted by the yield of refined sugar from a ton of beets.

d Average prairie farm price per 1 ton beets.

e By-products - molasses and beet pulp.

f Retail equivalent value less farm value.

Source: Dominion Bureau of Statistics.

TABLE 6. COMPARISON OF FARMER'S SHARE OF
RETAIL VALUE OF BEET SUGAR

	United States ^a	Canada
	(%)	(%)
1949-50	45	46
1950-51	46	46
1951-52	46	47
1952-53	47	42
1953-54	45	44
1954-55	44	47
1955-56	46	46
1956-57	44	47
1957-58	44	45

a Including government payments.

Source: U.S.D.A., Farm-Retail Spreads for Food Products, Misc. Pub. 741, Washington, Nov. 1957, pp. 94 and 137, and this study, Table 5.

MAPLE SYRUP AND SUGAR

1. Characteristics of Maple Syrup and Sugar Affecting Their Price and Cost of Marketing

During the World Wars, cane sugar was scarce, and this provided economic incentive for increased and improved production of maple products. Central packing and marketing and improved quality also resulted in more widespread distribution of maple products. In Canada, maple products are supposed to be sold only in the pure state, and are used chiefly as dessert foods.

Maple syrup and sugar, and some specialty items, are produced by the farmer by boiling down the sap of the hard maple tree. The run of maple sap is normally limited to three or four weeks in March and April, and sometimes lasts only a few days. In 1958, maple syrup reached the Montreal and Toronto markets in the third week of March, one to two weeks earlier than in 1957.

The maple bush can be a good source of off-season income to the farmer. Aside from favourable weather conditions, production of maple syrup requires considerable readily-available farm labour. A Vermont Bulletin claimed in 1956 that¹

"Apparently the biggest problem facing the maple syrup industry is the shortage and high cost of labor. Much human labor is needed for tapping trees, hanging buckets, gathering sap, sugaring off, and packing the product. It is therefore a large item of expense for sugarmakers who must hire extra help. The use of labor-saving devices is one solution to this problem. Power drills help to speed up the tapping process. Dumping stations with pipelines to the sugarhouse are another means of saving time. Pipelines running directly from the trees to the house may be a solution in some cases. It may be that larger scale operations are needed so it will become more economical to use laborsaving methods."

The principal maple product is syrup, but certain specialty products -- maple sugar, taffy, butter, cream and wax -- are also processed from maple sap. The main difference among all of these maple products is in moisture content, but colour and flavour are also important. Apparently, most consumers prefer a light-coloured syrup.

Grades for interprovincial and export trade are provided by

1 G.M. England and E.H. Tompkins, Marketing Vermont's Maple Syrup, Vermont Agricultural Experiment Station Bulletin 593, Burlington, June, 1956, pp. 17 and 18.

The Maple Products Industry Act and Regulations, administered by the Canada Department of Agriculture, Marketing Service, Fruit and Vegetable Division. This federal grading is not compulsory, however. According to the federal standards, maple syrup must be pure and must not contain more than 35% water, and a gallon of syrup must weigh at least 13 pounds 2 ounces. Within these requirements, there are four grades of maple syrup -- Canada Fancy, Light, Medium and Dark -- depending on colour and flavour. According to the federal standards, maple sugar must be pure and must not contain more than 10% water. There are three grades of maple sugar, depending on colour and flavour -- Canada Light, Medium and Dark.

Maple syrup is partly perishable. Perhaps the greatest waste is due to poor methods on the part of some farmers, which result in syrup of poor quality -- not readily saleable as a table product at premium prices and, indeed, for any other than industrial use.

Processing involves the collection, heating, blending, cleaning, packaging and storing of the maple products. Maple syrup is subject to fermentation if the moisture content has been inadequately controlled during processing. This is important, even to the farmer, who sometimes is left with unsold syrup on his hands beyond the spring season. In March, 1957, for the first time in many years, there was a carryover from the previous year. In processing and bottling there is some wastage also, but it is probably not great because maple syrup is not particularly viscous and hence drains readily from containers. Some spoilage in storage after reaching the consumer is not unknown. Maple sugar is not perishable, but it needs protective wrapping.

The crop is disposed of either by direct farm-to-consumer or farm-to-wholesale or farm-to-retail sale in gallon or smaller containers or in bulk to domestic packers and industry and export dealers. Direct marketings by farmers to consumers are mostly seasonal, but commercial packs are sold in the grocery stores throughout most of the year. Maple syrup for table use used to be merchandised mainly in gallon containers, but 26-ounce cans and 16-ounce bottles are being used with increasing frequency. Wholesale and retail grocers and jobbers usually handle farmer's packs in gallon or half-gallon tins. This syrup requires no further processing.

The larger dealers and handlers locate their bulk drums with grower to be filled and gathered. The bulk selling of syrup and sugar cuts down on the farmer's initial investment in equipment, containers etc., but it limits market outlets to a few processors and bulk handlers. There are 14 processing plants that are licenced by the Canada Department of Agriculture to deal interprovincially and export maple products. Normally, the processors reprocess the maple products to prevent fermentation, and package them under various brand names. Extensive advertising seems to be precluded because of the limited volume of sales. The maple products are held in common storage. Maple sugar is handled in blocks in sacks or boxes. Modernization of equipment and appliances has resulted in improved, and more uniform, quality of maple products.

During the last few years, at least, maple products have faced keen competition from cheaper artificial substitutes. Although these substitutes are labelled "artificial", they are also labelled "maple" and the general public perhaps thinks that these substitutes are at least partly maple. The Commission was informed that even genuine maple syrup can be upgraded by artificially lightening the colour of dark syrup -- this does not enhance its flavour, but it looks better and sells at a higher price.

2. General Disposition of the Supply

Trends in production, exports and imports of maple syrup in Canada over the last two decades are summarized in Table 1. In general, the production has been on a very slight downward trend from an average of 2,683,000 gallons over the prewar period 1935-39 to 2,590,000 gallons over the period 1954-58.

There was a marked increase over the last two decades in the proportion of our maple syrup production that was exported, from about 25% in the 1935-39 period to about 44% in the 1954-58 period.¹ Our maple exports go almost entirely to the United States. These exports

TABLE 1. TRENDS IN PRODUCTION, EXPORTS AND IMPORTS OF MAPLE SYRUP, IN CANADA OVER THE LAST TWO DECADES.

	Average <u>1935-39</u>	Average <u>1949-53</u>	Average <u>1954-58</u>
Production, (thousand gallons)	2,683	2,639	2,590
Exports, (% production)	24.9	42.5	43.7
Imports, (% production)	-	0.5	0.5

Source: Canada Department of Agriculture The Current Review of Agricultural Conditions in Canada, annual Situation Issues.

are partly for table use but mainly for use in the manufacture of compound syrups and in the tobacco and other industries. Bulk exports of maple sugar are mainly in 70-pound blocks. Imports have remained almost negligible except in 1953 and 1956. Our import tariff on maple

¹ On p.222 of Volume II of the Report it was erroneously indicated that exports amounted to over 80% of production in recent years.

sugar and syrup is $17\frac{1}{2}\%$ ad valorem, contrasted with U.S. tariffs of about 5% (actually 2¢ pound on maple sugar and $1\frac{1}{2}$ ¢ pound on maple syrup.¹)

The figures in Table 1 show the total production of maple syrup, both for use as syrup and for processing into sugar. Less than 5% of the maple syrup produced is being processed into sugar by the farmer, and the proportion has been declining over our decade of study, from about 7% at the beginning of the decade to about 4% in recent years.

3. Geographical Pattern of Production

Over the last decade, Quebec accounted for about 86% of the maple syrup, and for about 92% of the maple sugar, produced in Canada. Ontario is the second most important producing province, and small amounts of maple syrup are produced in New Brunswick and Nova Scotia. Lack of maple trees rules out production in other provinces.

Table 2 shows the geographic pattern of production of maple products in Canada by provinces for the years 1949-58. The sharp changes from year to year, due mainly to weather conditions, are clearly evident.

The Province of Quebec promotes the production and marketing of an increased quantity and improved quality of maple products. Quebec maple products must be graded prior to sale or else declared "unclassified". A large co-operative, Les Producteurs de Sucre d'Era-ble, at Levis and Plessisville, packs and markets a substantial portion of the Quebec crop. The Co-operative is able to maintain a quality control over its maple products more uniform than among non-member producers of syrup. Members of the Co-operative are paid an advance upon delivery of their syrup and subsequent interim payments as the product is sold by the Co-operative. In 1957 and 1958 a major part of Quebec's maple products were marketed under the federal Agricultural Products Co-operative Marketing Act. This guaranteed an initial payment by the co-operatives to their members amounting to about 60% in 1957 and 70% in 1958 of average farm prices for equivalent grades over the previous three years.²

There are persistent regional differences in the farm price of maple products. Table 3 shows the average farm values of maple syrup and sugar for the four producing provinces and Canada over the decade 1949-58. The largest producing province, Quebec, received decidedly lower farm prices for its maple products than the other three

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- 1 Canada Department of Agriculture Canada and the United States Tariffs on Selected Agricultural Products, Ottawa, March, 1957, p.16.
 - 2 Canada Department of Agriculture The Current Review of Agricultural Conditions in Canada, Conference Issue, Ottawa, November, 1958, p.50.

TABLE 2. TOTAL PRODUCTION OF MAPLE PRODUCTS EXPRESSED
AS SYRUP, BY PROVINCES, CANADA, 1949-58

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
						(thousand gallons)				
Quebec	2,059	2,442	1,900	2,979	1,815	2,136	1,987	2,388	2,758	2,135
Ontario	403	510	383	461	122	266	218	271	339	321
N.B.	15	23	19	23	9	14	20	14	29	22
N.S.	8	8	7	7	3	6	6	4	8	7
CANADA	2,485	2,983	2,309	3,470	1,949	2,422	2,231	2,677	3,134	2,485

Source: Canada Department of Agriculture Crop and Seasonal Price Summaries, Part I, Ottawa, annual.

TABLE 3. AVERAGE FARM VALUES OF MAPLE SYRUP AND SUGAR
FOR THE FOUR PRODUCING PROVINCES AND CANADA
OVER THE DECADE 1949-58.

Average Farm Value	CANADA	Quebec	Ontario	New Brunswick	Nova Scotia
Syrup, ((\$/gallon)	3.79	3.69	4.38	4.60	4.66
Sugar, (\$/lb.)	.43	.42	.45	.51	.56

Source: Canada Department of Agriculture Crop and Seasonal Price Summaries, Part I, Ottawa, annual.

provinces. Ontario, the second largest producer, received the second lowest prices. Since Quebec has a large maple products co-operative which would try to pay to its members as large a return as possible, some explanation is required for Quebec's low farm prices. It has been suggested that these farm prices reflect a lower degree of preliminary refinement of maple syrup delivered by Quebec farmers to plants for further processing. Another possible explanation is that Quebec's farm prices are lower because a large amount of the maple syrup is exported in bulk at wholesale prices for industrial purposes. Finally, supplies of maple products in Quebec are large relative to the size of the market, compared with the situations in the other producing provinces. These farm prices, of course, do not indicate relative profits to the farmers, since costs and volume of sales would also have to be taken into consideration.

As a further gauge of the degree of sensitivity of farm price to volume of supply, indexes were compared of the production and average farm value of maple syrup in Quebec for the 10 years 1949-58. These are shown in Table 4. Table 4 indicates that normally the year-to-year changes in production of maple syrup in Quebec over the last decade were accompanied by inverse changes in the farm price. The inverse relationship between supply and price, which might be expected, was not invariably strong, however. This may have been due mainly to conflicting influences on supply in certain years from competing areas of production such as New England and Ontario. Compensating shifts in the demand for maple products in certain years could have been a contributory factor, but it is difficult to see why erratic changes in demand should occur.

TABLE 4. INDEXES OF PRODUCTION AND FARM PRICE
OF MAPLE SYRUP, QUEBEC, 1949-58
(1949 = 100)

	<u>Production Index</u>	<u>Farm Price Index</u>
1949	100	100
1950	120	95
1951	92	98
1952	147	92
1953	89	102
1954	107	127
1955	101	136
1956	123	99
1957	143	85
1958	109	86

Source: Adapted from Canada Department of Agriculture Crop and Seasonal Price Summaries, Part I, Ottawa, annual.

4. The Seasonal Pattern of Price Variability

Unfortunately, systematic data on retail prices of maple products are not available for our decade of study. This means that it is impossible to derive a monthly retail price pattern. Seasonal information is available, however, on wholesaler-to-retailer prices for maple syrup by major markets (e.g., Montreal, Toronto, Ottawa, Quebec City) and by province of origin.¹ An examination of these data indicate that the normal seasonal price pattern for maple syrup is to begin high and then fall progressively throughout the short spring season. There are exceptions to this. For example, in Montreal at the end of the 1958 season, the wholesale price of syrup rallied slightly.

5. Estimating the Farm-Wholesale Spread for Maple Syrup

Due to the lack of systematic retail prices, it is not possible to estimate the farm-retail spread for maple products. Because of the relative unimportance in the United States of maple products, farm-retail spread figures are not available there either. The best that can be done, and even this involves pushing the data hard, is to estimate the farm-wholesale spread for maple syrup in Ontario and Quebec. Wholesale quotations are available for the six-to-10 week syrup season, but they are actually a combination of wholesale and retail prices. This is because a substantial proportion of the maple syrup reaching the consumer during the maple season is sold by the producer himself on farmers' markets at prices recorded as "wholesale". Furthermore, an unknown amount of maple syrup is sold by the farmer at unknown prices directly to retail stores or to tourists and local residents at roadside stands.

As already pointed out, annual average farm prices are available for the producing provinces. No adjustment for exports was made to these prices because of lack of information on the farm value of maple product exports. Seasonal average wholesale prices are available for Montreal, Quebec City, Toronto and Ottawa for the years 1950-58. To derive provincial wholesale prices for Quebec and Ontario, it was considered advisable to weight these annual city prices by their respective populations. The results of these farm-wholesale spread calculations are summarized in Table 5.

1 Canada Department of Agriculture Fruit, Vegetable and Honey Crop and Market Reports, Ottawa, weekly; and Crop and Seasonal Price Summaries, Part I, Ottawa, annual

Table 5 shows that, on the average over the nine years 1950-58¹, the wholesale and farm prices of maple syrup in Ontario exceeded those in Quebec by substantial amounts. This was true especially of the farm price which averaged \$4.42 a gallon in Ontario, compared with \$3.69 in Quebec. The farm-wholesale spread in Quebec exceeded that in Ontario by an average of about 22¢ per gallon. The Quebec spread, moreover, was more volatile from year to year. In 1954, for example, the Quebec spread dropped to 4¢ per gallon, contrasted with 63¢ in Ontario. A better quality crop and a strong United States demand were mainly responsible for the jump in farm prices in Quebec in 1954, compared with previous years. The year 1956 was unusual, especially in Quebec, as indicated by the large farm-wholesale price spread. The Quebec farm price in 1956 dropped back from the high levels of the two previous years, but the wholesale price continued to advance. The 1956 spread in Ontario also was unusually large, only to drop back sharply in 1957. The larger crop in 1957 was reflected in lower wholesale prices generally, but the farm price in Quebec sagged more than in Ontario. The 1958 crop of maple syrup was smaller than in 1957, and prices rallied.

The farmer's share of the wholesale price of maple syrup averaged about 89% in Ontario over the period, compared with about 81% in Quebec.

The Commission was informed that the retailer takes a markup of 20% to 25%. If the retail markup in Canada on maple syrup over the period had averaged 20% to 25% (and this only an assumption), the farmer's share of the retail price would have been between 65% and 69%.

6. Retail Markup in Vermont

In the Vermont study referred to earlier, 89 retailers were asked in 1953 what markup they felt they had to get for handling maple products. About 84% of these retailers answered for markups between 20% and 35%.²

1 In Volume II, Table 61, calculations are for the eight year period, 1950 to 57.

2 Marketing Vermont's Maple Syrup, pp. 19 and 20.

TABLE 5. SUMMARY OF FARM-WHOLESALE SPREADS ON MAPLE SYRUP,
QUEBEC AND ONTARIO, 1950 TO 1957

Calendar Year	QUEBEC			ONTARIO		
	Wholesale Value ^a	Farm Value	Farm- Wholesale Spread	Wholesale ^b Value	Farm Value	Farm- Wholesale Spread
(dollars per gallon)						
1950	3.75	3.44	.31	4.45	4.05	.40
1951	4.07	3.55	.52	4.56	4.29	.27
1952	3.96	3.33	.63	4.80	4.21	.59
1953	4.51	3.69	.82	4.94	4.32	.62
1954	4.64	4.60	.04 ^c	4.91	4.28	.63
1955	5.51	4.91	.60	5.36	4.48	.88
1956	5.98	3.57	1.41	5.88	4.71	1.17
1957	4.40	3.08	1.32	4.96	4.65	.31
1958 ^d	4.49	3.11	1.38	4.89	4.81	.08

a Average annual wholesale prices for Montreal and Quebec City, weighted by estimated relative populations.

b Average annual wholesale prices for Toronto and Ottawa, weighted by estimated relative populations.

c Something may be wrong with the official figures for Quebec for 1954; a farm-wholesale spread of 4¢ per gallon seems too small.

d Preliminary

Source: Canada Department of Agriculture Crop and Seasonal Price Summaries, Part I, Ottawa, annual; D.B.S. Census of Canada 1956, Population Incorporated Cities, Towns and Villages, Ottawa, 1957.

FISHERIES PRICE SPREAD STUDIES

INTRODUCTION TO STUDIES OF FISHERIES COMMODITIES

While Chapters 1 and 2 of Part VI in Volume II of the Commission Report contain general and particular information on the Canadian fisheries and the domestic market for fisheries products, a considerable amount of information and analysis was not included, in consideration of available space and proportionate treatment of subjects. In this volume, the commodity studies are presented in greater detail, preceded by some general information concerning fish as a food product and its perishability. Government measures applicable specifically to fishermen and the fishing industry were only briefly mentioned in Volume II.¹ Further particulars concerning the more important and directly applicable measures of this kind are contained also in this introduction.

1. The Perishability of Fisheries Food Products

Perishability is a difficult problem, of course, in the handling and distribution from primary producer to consumer of many agricultural, as well as fisheries products, requiring the observance of certain limitations relating to time, temperature and humidity in transportation and storage of the products. The solution for some highly perishable products, such as fluid milk for consumer use, is to locate production, processing and distribution geographically close to the consumer. With limited exceptions, fish has to be taken from natural waters located at great distances from large urban consuming centres, and the very fact of its perishability requires that processing be carried out close to its point of landing. The principal agricultural protein foods may be kept for quite long periods under proper conditions, and fresh-killed beef, for instance, can in fact be improved in flavour and tenderness by storage in a cooler for several days to break down the connective tissues. Fish flesh, on the contrary, is more delicate and more perishable than meat; supported as it is by the water around it, the fish does not need the strong fibres and connective tissues found in the muscle of land animals. Furthermore, bacteria capable of growing at low temperatures are present in large numbers in the protective slime on the skin of the fish; consequently, it is impossible to prevent some degree of infection of the flesh with these bacteria in the process of gutting or beheading or filleting the fish, no matter how careful the washing and handling of the fish may be. Autolysis and proteolysis, and in the case of fatty fishes, rancidity, also play their part in the development of undesirable flavours and odours. The fish in its ocean habitat is subject to a temperature range usually from the freezing point to 50°F. or 60°F. The enzymes and bacteria carry on their decaying action rapidly at higher temperatures, and deterioration of the flesh begins as soon as the fish is dead.

¹ See, for example, pp. 229-230 and 251 of Volume II.

Various methods have been developed and used for the preservation of fish. Quite early in history, the removal of moisture by drying or salting, or a combination of both, was used to prevent spoilage of meat and fish. This made possible the extensive exploitation of codfish from the northwest Atlantic by European countries from the beginning of the sixteenth century. Oily fish, such as herring and salmon, become rancid because the unsaturated oil in the flesh is oxidized through contact with the air; smoking the fish retards rancidity because the phenols in wood smoke react with the oil. Salting, smoking, and the discovery of tight coopering to provide barrels that would hold brine and exclude air, formed the basis of the extensive use of North Sea herring as food in the Middle Ages, and of the wealth of Dutch and North German cities in trade. Exclusion of air is a feature of the canning process - combined also with sterilization of the food by heat - which was introduced and improved during the nineteenth century. By the beginning of the twentieth century, cured and canned fisheries products were widely distributed in world trade.

These methods of preservation change the fish in flavour, colour, odour, and texture. The flavour of fresh fish was known only to those living near to the place where it was caught until the development of steam power for rapid rail and water transportation made it possible to supply distant and inland consumers with nearly fresh fish - particularly when ice was used to slow down the process of deterioration. Where distances were great, however, as in North America, the development of commercial freezing, and the establishment of distribution and holding facilities for frozen fish were necessary to the growth of a mass market.

Because of the speed at which deterioration in fish takes place, good quality in fresh or frozen fillets is dependent upon filleting the fish as soon as possible after it is caught, combined with careful handling on the vessel and wharf and in the plant. On the vessel, such things as careless gutting and washing, over-exposure to warm air and sun on deck before icing, bruising or slashing or forking through the fillet portion of the fish, and scanty or otherwise faulty icing and storage can shorten the keeping life of the fish enormously. Unloading at the wharf requires care to avoid bruising or forking the sides of the fish; in the plant, proper icing is required to keep the temperature of the fish close to the freezing point, if the fish has to be held for a time before filleting. Good processing requires the use of the best sanitary methods and equipment to minimize bacterial contamination of the fillets during the cutting, candling and packaging operations.

Use of some chemical bacteriostats improves the keeping quality of fillets. Sodium nitrite in solution was formerly used, but is no longer authorized. More recently, some tetracycline antibiotics have proved to be very effective in inhibiting the growth of bacteria in the flesh of fish or poultry. Chlortetracycline (CTC) and oxytetracycline (OTC) in a dilute-food grade-solution (as trade products "Aureomycin", "Acronize", "Biostat") have been authorized by health authorities for use on fish and poultry meat. The antibiotic is dissipated

in the heat of cooking and in the low concentrations used, only inconsequential or trace elements of it are left in the cooked food.

Some plants and some fishermen rate very high marks for their fish handling methods, but others still seem to be unaware that their product is to be used as human food. Education is a slow process at times, and the institution of a compulsory inspection and grading system for fresh and frozen fish might be necessary to raise quality standards adequately. During recent years, federal Department of Fisheries inspectors have been grading fish on the wharf and in the plant by voluntary agreement with plant management. Currently, plants conforming to definite specifications as to sanitation, equipment and methods may have their products inspected and use a "Canada Inspected" label on the wrapper or container of frozen fish items meeting quality and processing standards. Whole or filleted fresh fish passing inspection may be labelled "Processed Under Government Supervision".

It is not generally recognized, however, that the care required to ensure first class quality in fish represents, in many instances, an additional cost. Fishermen are not likely to use more ice and take extra care, if their catch does not carry a higher value when landed than someone else's fish handled in the old indifferent way. In processing, modern and sanitary equipment, such as stainless steel tables, is expensive, and adequate candling to remove bones and impurities from the fillets may require large additions to staff. Maintenance of quality enlarges the price spread in distribution as well. Ice or refrigeration is necessary in the shipment and storage of fresh or frozen fish. The express charge on iced shipments commonly includes an additional 20% or 25% on the net weight of the fish; refrigerator boxes, a more efficient method of maintaining fresh fish at a constant low temperature from plant to retailer or restaurant, may require an additional 40%. Public or private cold storage space is necessary for holding frozen fillets, and the fresh fish wholesaler or retailer should have refrigeration facilities capable of keeping the fish at 34°F.

Waste through spoilage represents a higher cost in the fresh fish trade, of course, than in frozen fish. Fillets under the best conditions of handling, processing, transportation and storage, from fish landed not more than four or five days after being caught, might average three or four days as fresh fillets of highly acceptable quality in the retail store, with an additional life of perhaps three days as acceptable quality fillets. After purchase, the fillets might be stored for a further period in the consumer's refrigerator before being cooked. Acceptable quality fillets may be defined as edible, but somewhat unappetizing to one accustomed to the flavour of fresh fish; the retailer could realize some salvage value by selling them (perhaps at a reduced price), but would be doing himself and the industry a disservice in reality, if the customer finds the product stale and unattractive and buys less fish in the future, as a result of such experience.

Quick-freezing of fish produces smaller ice crystals, hence there is less water loss or drying-out of the fish on thawing. Frozen fillets may be kept several months or a year without appreciable deterioration, if quite fresh when first processed, and if a storage

temperature 5° to 20° below zero Fahrenheit (or lower) is maintained. Denaturation of the protein is one of the more serious changes that occur at higher storage temperatures, although no noticeable change occurs from exposure to 10°F. or 15°F. for a day or two, for instance, during transportation. Humidity conditions of the storage atmosphere are also important; dessication ("freezer-burn") occurs by evaporation of water from exposed surfaces. Vapour-proof wrapping or glazing by dipping the fish in water immediately after freezing it are common methods of protection against dessication. Other gradual losses in quality occur through the chemical action of other substances in the fillet; the most common of these is the development of rancidity in fatty fishes. This is not a serious problem with groundfish fillets. Nevertheless, they cannot be stored indefinitely without loss of quality in terms of flavour, colour and texture; proper handling of frozen fillet stocks requires that they be replaced every few months.¹

2. Government Assistance to the Primary Fisheries²

Certain government programs set up in Canada for the specific purpose of assisting fishermen have had direct or indirect influences on fisheries production. While some of the programs are applicable nationally, a number are limited in their regional or provincial application. Among the latter are certain federal programs and, of course, those established by provincial jurisdictions. However, the following statement is by no means intended to cover all government assistance, either federal or provincial. It does not take into account the research, protection, fish culture, inspection and other fields of activity, and only touches briefly upon one or two aspects of the marketing

1 For more complete information on the subject of quality maintenance in fish, see the following: (1) The Commercial Fisheries of Canada, Royal Commission on Canada's Economic Prospects, Ottawa, 1956, Chapter 3, "The Products"; (2) C.H. Castell, Spoilage Problems in Fresh Fish Production, Bulletin No. 100, Fisheries Research Board of Canada, Ottawa, 1954; (3) W.A. MacCallum, Fish Handling and Hold Construction in Canadian North Atlantic Trawlers, Bulletin No. 103, Fisheries Research Board of Canada, Ottawa, 1955; (4) Progress Reports of the Atlantic Coast Stations, Fisheries Research Board of Canada, Nos. 59, 62 and 65; (5) W.J. Dyer, "Storage and Transportation of Frozen Fish", Canadian Fisherman, Gardenvale, P.Q., June, 1957; and (6) Frozen Fish Improved Quality and Packing - Project No. 325, The European Productivity Agency of the Organization for European Economic Cooperation, Paris, 1956.

2 This statement covers only the more important and direct fisheries assistance programs of governments, federal and provincial. In addition, fishermen, of course, participate in general social welfare programs, and in some instances, specific provision is made for fishermen in other programs, such as, for example, those pertaining to extension work, education, The Sick Mariners Service and Unemployment Insurance.

field and certain educational grants. The subjects considered in the following section include loans to fishermen, subsidies on fishing vessel construction, improvements to the supply of bait, boat insurance, and government deficiency payments and price support programs for fisheries products. Fishermen also benefit from various federal and provincial social security programs, applicable to all citizens.

Loans to Fishermen

Fishermen's loan agencies have been established by the governments of the three Maritime Provinces, Newfoundland and Quebec. These provide loans to fishermen otherwise unable to purchase hulls or boats, engines, or fishing gear, provided certain requirements, including a cash down payment, can be met. Loans are available also to associations of fishermen, to companies, and in certain circumstances, to boat builders. In some provinces, provincial loans have assisted the establishment or improvement of fish processing facilities.

In Quebec, fishermen obtain loans also from their "Credit Maritime" system of credit unions for the purchase of boats and gear. The provincial government assists by paying part of the interest on loans and the premium on insurance policies on the lives of the borrowers. The Quebec and New Brunswick governments pay a part of the insurance premiums on boats upon which provincial loans have been made.

The federal Fishermen's Loan Act of 1955 empowered the Minister of Finance to guarantee to the lender, loans made to a fisherman not exceeding \$4,000, under certain prescribed conditions, for any such purpose as the purchase or construction of a fishing vessel or fishing equipment, the major repair or overhaul of a fishing vessel or its engine, the purchase or construction or repair of a shore installation or building, or any prescribed improvement of a fishing enterprise. The term of such loan is not to exceed eight years, and the rate of interest not to exceed 5%.

Dragger and Long-Liner Assistance

To promote the modernization of fishing operations of fishermen in the postwar years, the Canadian Government has paid, through the provincial fishermen's loan boards, a grant of \$165 a gross ton for the approved construction of fishing vessels of the dragger or long-liner types. Payments on this account over the 12 fiscal years April 1, 1947, to March 31, 1959, amounted to just under \$2,125 thousand.¹

The Government of Quebec pays graduated subsidies of \$2, \$4, or \$6 per foot of length on construction of small fishing boats. In Newfoundland also, the provincial government pays a grant amounting to \$160 per gross ton for approved fishing vessel construction. The

1 Data from the annual Public Accounts of Canada, Queen's Printer, Ottawa. In addition, in the two years 1946/47 and 1947/48, federal government expenditures amounting to over \$145 thousand were made for "assistance in the construction of dragger type vessels and conversion of fishing schooners to draggers".

federal and provincial assistance in that province has amounted to around 42% of the original cost of boat and equipment. In the other Atlantic Provinces, the federal grant has represented about one-quarter of the cost of long-liners (50 to 60 feet in length) and about one-sixth of the cost of the more strongly constructed draggers.¹ Boat-building costs have continued to rise, and the subsidy is currently a smaller share of the total cost of construction.

Bait Assistance

A measure to ensure bait supplies in Atlantic areas has been a grant to processors and cold storage operators to cover part of the cost of approved facilities to freeze and store bait. These subsidies, in the nine years to March, 1957, totalled close to \$140 thousand. No payments were made in the two following years.

With the entry of Newfoundland into confederation in 1949, the federal government assumed responsibility for the operation of bait depots in that province. The costs of the aggregate deficit, on this account, in the 10 years ended March, 1959, was just short of \$2,132 thousand.

Small Boat Insurance

Marine insurance rates on the small boats and vessels of in-shore fishermen are high because of the high cost of providing the service to isolated and widely separated communities. In consequence, few small vessels are insured with commercial companies, and fishermen are subject to serious hardship from lost or damaged boats and the consequent interruption of their fishing activities. In 1953, the Canadian Government instituted an insurance plan restricted to fishermen-owned, powered fishing vessels in the appraised value range of \$250 to \$7,500 (the approximate value range of inshore fishing craft). The upper limit was raised to \$10,000 in 1957. An annual premium rate of 1% of the appraised value was set, with an indemnity of 60% of the appraised value in case of total loss, or the approved cost of repairs above 30% of the appraised value in cases of partial loss. The hazard of storm damage to inshore craft is less in the protected waters of the British Columbia coast, and the rates of indemnity for that province have, consequently, been raised to 70% of appraised value for total loss, and approved costs in excess of 15% of the appraised value for partial loss.

An insurance plan for lobster traps was also established.² To administer the insurance, a group of fisheries officers were given special training in vessel appraisal and damage adjustment, and area administrators were appointed in the four main fishing regions.

1 John Proskie, Operations of Modern Long-Liners and Draggers, Atlantic Seaboard, 1952-1956, Economics Service, Department of Fisheries, Ottawa, 1957, Vol. 6, Part 1. See also Vol. 7, Part 1, pp. 14-15.

2 Particulars of the plan for lobster traps are given in the commodity study for lobsters.

In six years of operation, to March 31, 1959, net premium revenues in the vessel insurance plan amounted to \$476,619 and claims paid, to \$508,183. The coverage at the end of March, 1959, included 3,202 vessels with an insured value of \$4,806,025 on the Atlantic coast, and 1,929 British Columbia vessels with an insured value of \$9,819,860. The lobster trap insurance scheme at that date had received \$97,164 in net premiums, and had paid indemnities amounting to \$303,648.

Price Support Purchasing and Deficiency Payments

Under the Fisheries Prices Support Act of 1944, the Fisheries Prices Support Board was established in 1947, given a working fund of \$25 million, and empowered to support prices of fisheries products (1) by the purchase of any fisheries product at a prescribed price, or (2) by deficiency payments to producers of a fisheries product, equal to the difference between a prescribed price and the average price realized for such product during a specified period. Each support program undertaken by the Board was by authority of an Order-in-Council, prescribing quantities, prices, and certain other conditions.

The net cost of each of the various programs undertaken during the 10 years ending March 31, 1958, is shown in the table below:

FISHERIES PRICES SUPPORT BOARD OPERATIONS, 1948/49 TO 1957/58

	Net Cost (\$)
1. Net Losses on:	
(a) Manitoba lakes frozen fish (1949/50)	264,808
(b) East coast canned fish (1948-51)	1,144,708
(c) Newfoundland salt cod (1949 production)	82,565
(d) Prairie frozen fish (1953/54)	191,521
(e) Atlantic coast bloaters	42,741
(f) Atlantic coast salted fish (1953 production - shipped to Korea)	446,903
2. Deficiency Payments on:	
(a) Quebec hair seals (1950/51)	5,342
(b) Labrador salt cod (1950 production)	447,860
(c) Newfoundland shore-caught salt cod (1950 production)	810,105
(d) Pickled mackerel fillets (1952-54)	22,258
(e) Saguenay County (Quebec) salted codfish (1953 production)	37,521
(f) Newfoundland salted codfish (1953 production)	646,984

Fisheries Salt Assistance

As a means to improve the unsatisfactory position of Atlantic coast fishermen dependent upon the production and marketing of salted fish products, the Governor-in-Council approved the payment of assistance to producers of designated salted fish products, in the amount of 50% of the laid-down cost of salt used. Products marketed in the United States were excluded from salt assistance. The Fisheries Prices Support Board was made responsible for the administration of the salt assistance program. In the four years the program has been in operation, to the end of March, 1959, a total of \$2,400,440 has been paid out in salt assistance, of which \$1,544,424 was paid to fishermen and \$856,016 to processing plants.

Fishing Bounty

Under authority of the Deep Sea Fisheries Act, the Governor-in-Council may authorize the payment, out of the consolidated revenue fund, of an annual grant not exceeding \$160 thousand to aid in the development of the sea fisheries of Canada, and the improvement of the condition of fishermen. The \$160 thousand represents the annual interest on the amount awarded to Canada by the United States under the Treaty of Washington of 1871, in return for certain fishing privileges in Canadian waters. Fishermen who have engaged in deep sea fishing for at least three months of the year, and who have caught not less than 2,500 pounds of sea fish, receive a grant; likewise, owners of boats of not less than 12-foot length of keel, and vessels of not less than 10 tons, register.

CANNED SOCKEYE SALMON

1. The Raw Material

The Pacific salmon are the most important group in the Canadian fisheries, comprising about two-thirds of the value of British Columbia landings and one-fifth or more of the value of all Canadian landings. The five species by common names, (species names in brackets) are sockeye (*Oncorhynchus nerka*), pink (*Oncorhynchus gorbuscha*), chum (*Oncorhynchus keta*), coho (*Oncorhynchus kisutch*), and spring (*Oncorhynchus tshawytscha*). The flesh of springs is sometimes red, sometimes pink, and sometimes white; early maturing males are called jacks. Bluebacks and steelhead trout are also caught in British Columbia, but the blueback is really a coho in British Columbia and the steelhead (*Salmo gairdnerii*) is the anadromous member of a species that may also live wholly in fresh water. It resembles in appearance and habits the Atlantic salmon (*Salmo salar*).

All Pacific salmon are anadromous - ascending fresh-water streams from the sea to spawn in the gravelly stream-beds. The five salmon species spawn once, then die, but steelhead, like Atlantic salmon, may make several spawning trips from the sea. When the salmon leave the ocean, they are well-fed and strong, but they eat nothing after they start for the spawning grounds; their reserve fat and some muscle protein are used up in the journey and in the formation of eggs or milt. At the same time, the upper jaw becomes hooked (the name "*Oncorhynchus*" means "hooked snout"), and the male pink salmon also develops a hump on its back. Sockeye ascend to the interior of British Columbia to spawn in streams tributary to lakes, and the young leave these streams for the lakes, where they spend one or two or sometimes three years before descending to the sea.

Some comparative data concerning the five Pacific salmon species are given on the following page.

The general uniformity in size of salmon within species facilitates handling and processing by mechanical means. A salmon-run consists of salmon of the same age group. The iron chink, a machine for the automatic beheading and gutting of fish was introduced into salmon canneries in 1906, and many technological improvements in canning have been made since that time.

Practically all sockeye and pink salmon are canned. Sockeye retains its colour well when canned, which appears to be the principal reason it retails at about twice the price of pink salmon. The other three species and steelhead trout are also canned, but a considerable part of the catch is sold in the fresh and frozen forms. Spring salmon is the species usually used for mild-curing. It is also smoked and dry-salted and used for frozen fillets. Indians smoke a good deal of chum salmon for their own use.

Species (Other Names)	Life Span (years)	Approximate Size at Maturity			Principal Forms	Ranking	
		Length (ft.)	Weight (lb.)			Protein Content	Fat Content
Sockeye (Red)	4 (up to 5 or 6)	2	5 (up to 15)		Canned	3rd	2nd
Pink (Humpback)	2 (occas. 3)	2	3-5 (up to 10)		Canned	1st	4th
Chum (Keta) (Qualla) (Calico)	4 (occas. 3 or 5)	2½	8 (up to 30)		Canned Fresh Frozen Dry-salted	4th	5th
Coho (Cohoe)	3 (occas. 4)	2½	6-12 (up to 26)		Canned Fresh Frozen	2nd	3rd
Spring (King) (Chinook) (Quinnat) (Tyee, if over 30 lb.)	4 or 5 (3 to 8)	3	20 (10 to 50)		Fresh Frozen Mild-cured Smoked Dry-salted	5th	1st

2. Disposition of the Catch

The British Columbia sockeye catch averaged 31.8 million pounds a year over the 10 years 1949-58, with an average value of \$7.7 million. The 10-year annual average for all Pacific salmon species was 159.4 million pounds worth \$22.8 million.¹

The Canadian average annual canned sockeye salmon pack for the same 10-year period was 461 thousand standard cases of 48 one-pound tins or the equivalent, and the pack of all species averaged 1,560 thousand cases. Using a conversion rate of 69 pounds of sockeye, landed weight, to the standard case, the average sockeye pack represents landings of about 31.8 million pounds a year - i.e., virtually all of the sockeye landings.

The British Columbia sockeye pack represented 29% of the total British Columbia canned salmon production over the 10 years 1949 to 1958, inclusive. In the same period, the Canadian sockeye pack was also 29% of the total North American canned sockeye salmon output.

The British Columbia sockeye salmon pack averaged about 461 thousand cases a year for the 10-year period 1949-1958. Although canned salmon imports into Canada are usually negligible, an estimated 350 thousand cases of Japanese canned salmon (mostly sockeye, but some coho) were brought in during the three years 1956, 1957 and 1958, and these added to the Canadian sockeye pack raised the average supply figure for the 10 years to about 496 thousand cases a year. Canadian exports of canned sockeye amounted to an average 162 thousand cases a year over the period 1949-1958. (Table A3, Appendix.) Stock changes from year to year are not known, but evidently about one-half of the great 1958 sockeye pack - perhaps half-a-million cases - was not shipped out until 1959. Otherwise, the yearly carry-over averaged out over a 10-year period would not be a very important factor. Assuming that stocks at the end of 1958 were greater by 350 thousand cases than at the beginning of 1949, the apparent average domestic disappearance of canned sockeye salmon was of the order of 300 thousand cases or more than 14 million pounds a year.

Production figures were low for 1955, 1956 and 1957, and the Canadian domestic disappearance of canned sockeye apparently fell off to an average of 282 thousand cases a year for 1956 and 1957 - about double the amount imported. However, an estimate of domestic "consumption" for any one year lacks reliability in the absence of adequate information on stock holdings at all levels in the processing and distributing trades.

British Columbia's average annual pack of all salmon species for the period 1949 to 1958 was 1,560 thousand cases, of which 804 thousand or just over one-half were exported. Including imports of about 350 thousand cases over the 10 years, sales of all varieties of

¹ See Appendix, Table A1.

TABLE 1. BRITISH COLUMBIA CANNED SALMON PACK, BY SPECIES AND BY YEARS, 1949 TO 1958(Thousands of Cases)^a

Year	Sockeye	Pink	Chum	Coho & Blueback	Spring & Steelhead	All Species, Total
1949	260	710	228	215	24	1,436
1950	408	445	503	124	12	1,492
1951	428	736	462	313	17	1,956
1952	449	679	92	65	13	1,299
1953	510	795	394	110	16	1,825
1954	681	336	581	128	18	1,743
1955	245	831	125	186	19	1,406
1956	320	364	204	212	13	1,112
1957	228	752	240	193	12	1,424
1958	1,079	456	229	132	12	1,908
Average (1949-58)	461	610	306	168	16	1,560
Species Per Cent of 1949- 58 Total Pack	29	39	20	11	1	100
	Red	Pink	Keta	Medium Red	King or Chinook & Steelhead	Total
N. American Average 1949-58	1,566	2,148	1,272	433	200	5,619
Canadian Average Pack as a Per Cent of N. American 1949-58	29	28	24	39	8	28

^a The unit is the standard case of 48 one-pound tins or the equivalent.

Source: Economics Service, Department of Fisheries of Canada; United States pack data from the Pacific Fisherman, Yearbook Number, Jan. 25, 1959, p. 85. Totals do not agree in all cases to sum of species packs because of rounding.

canned Pacific salmon in the Canadian market averaged about 790 thousand cases or 38 million pounds a year.

3. Location and Conditions of Production

British Columbia sockeye salmon landings in 1958 were 73.2 million pounds valued at a total of \$20.2 million, compared with 15.7 million pounds worth \$4.4 million in 1957, and a 10-year average 1949-58 of 31.8 million pounds and \$7.7 million. The yearly figures for sockeye and for all Pacific salmon are contained in Table A1 of the Appendix. Both the volume and value of the total Pacific salmon catch vary more widely from year to year than for sockeye alone - leading to the conclusion that the sockeye catch is a more stable element in salmon fishermen's incomes.

Salmon can be caught on the high seas, but are most easily caught in quantity in coastal waters and estuaries when they return to their home rivers to spawn. The most common method of fishing for sockeye is the gill-net, set at the mouths of rivers, but purse-seine nets are also used. A few stationary trap-nets are permitted in part of the Strait of Juan de Fuca, but the catch is only a small part of the total, the figures being included with those for seine-caught fish. Only a few sockeye are landed by trollers, which catch mainly spring and coho.

Over the years 1951 to 1957, gill-nets accounted for 76% of the Canadian sockeye catch and 43% of the catch of all salmon species, while purse-seines accounted for slightly less than 24% of the sockeye and 44% of total salmon landings. Trollers landed nearly 14% of the catch of all salmon species. Purse-seines landed nearly 54% and gill-nets 45% of the tremendous sockeye catch of 1958, but the gear proportions of the catch of all species were not greatly different from the 1951-57 averages.¹

Salmon moving home to the Fraser River become concentrated in the Strait of Juan de Fuca and large numbers are caught there and in the internationally-regulated waters west of the Strait. At times (as in 1958), Fraser salmon approach the river around the north end of Vancouver Island and through the Johnstone and Georgia Straits. The sockeye catch is heavy also just north of Vancouver Island (Rivers Inlet and Smith Inlet) and in the Naas and Skeena areas near Prince Rupert.

The Fraser River system has nearly a thousand square miles of lakes - about twice the area of all of the other British Columbia sockeye-producing lakes. The rock slides at Hell's Gate in 1913-14 almost

1 The Commercial Salmon Fisheries of British Columbia, Statistical Basebook Series, No. 3, Department of Fisheries of Canada, 1958 (hereinafter called the Salmon Basebook), Table 6, p. 20. Data for 1957 and 1958 from British Columbia Catch Statistics, Department of Fisheries of Canada, Pacific area.

wiped out the Fraser River sockeye runs. International action to rehabilitate the runs was delayed until the International Pacific Salmon Fisheries Convention was ratified by Canada and the United States in 1936. The fishway at Hell's Gate (completed in 1945), the removal of stream obstructions and the construction of other fishways, week-end and special closures during the fishing season to ensure adequate spawning escapement of fish, and other regulatory measures have gradually restored the runs on the Fraser and other streams. Conservation measures could well bring about a considerable further increase in sockeye stocks.¹

The number of sockeye salmon caught each year by British Columbia fishermen is dependent primarily upon the size of the runs to British Columbia rivers, the catch in Convention waters being regulated by the International Pacific Salmon Fisheries Commission by closures and other methods to provide an approximately equal division of the catch between Canadian and United States fishermen and to ensure an adequate spawning escapement. The four-year sockeye life cycle means that a dominant stock in any one of the lakes produces a heavy run to that area every fourth year. Thus, the tremendous run to the Fraser in 1958 produced by the "Adams River" dominant stock was preceded by heavy, although lesser, runs in 1954 and in 1950. Since 1930, the dominant stocks in the different lakes have been more evenly distributed among the four years of each cycle, so that annual total catch variations have been somewhat reduced.² Nevertheless, the year-to-year catch differences are still wide; Canadian sockeye landings in 1955, for instance, were little more than one-third of those of the previous year, and the 1957 catch was even smaller - the lowest since 1943.

Spring salmon are caught throughout the year, but runs of sockeye and of the other species occur from late May to October, with some chum and a few coho being taken in November. The seasonal pattern of sockeye landings is illustrated by the 10-year monthly average data given in Table A2 of the Appendix.

The International Pacific Salmon Fisheries Commission, just previously referred to, was established in 1936 for joint Canadian-United States control of the sockeye salmon fishery. By agreement at the end of 1956, the Commission was also placed in control of the pink salmon stocks of the Fraser River-Straits of Juan de Fuca area. In 1952, Canada, Japan and the United States concluded the International Convention for the High Seas Fisheries of the North Pacific Ocean, setting up a Commission for research and recommendations and agreeing to abstain from fishing on the high seas any stocks under scientific management and already fully exploited by one or two of the parties to the Convention.

British Columbia fishermen are strongly organized, their organizations being the United Fishermen and Allied Workers' Union (which also

1 The Commercial Fisheries of Canada, Royal Commission on Canada's Economic Prospects, 1956, p. 19.

2 Ibid.

represents the workers in the processing plants), the Vessel Owners' Association, and the Native Brotherhood of British Columbia (Indian fishermen). All of the major processing companies belong to the Fisheries Association of British Columbia. For several years minimum prices for gill-net and seine-caught salmon of the different species have been negotiated between the unions and the Fisheries Association at the beginning of each season. Separately negotiated contracts cover other aspects of fishing operations, such as wages for tendermen and shore workers in the camps and processing plants, minimum number of crewmen on the fishing boats, and contributions to a welfare fund.

There are several fishermen's production co-operatives in British Columbia, the largest being the Prince Rupert Fishermen's Co-operative Association. The co-operatives market a comparatively small amount of canned salmon; their pack is processed by custom canners. The Fishermen's Co-operative Federation was incorporated in 1944 to market the products of the member associations. Sales in the United States are handled through Fishermen's Federation Incorporated, which is the sales agency also for the Halibut Producers' Co-operative of Seattle, Washington. Members of the producers' co-operatives can also obtain co-operative marine insurance and can borrow from their credit unions.

Almost all seine fishermen operate on a share basis, shares of the catch being allocated also to the boat and gear. For instance, on a purse-seiner with seven in the crew, $2\frac{1}{2}$ shares might be allocated to the boat and $1\frac{1}{2}$ shares to the net, making a total of 11 shares in the division of the proceeds of the catch after certain expenses (fuel, food, etc.) are deducted. The smaller boats are usually owned by fishermen, although frequently a fishing company has a mortgage equity in the boat. Many of the larger seiners are company-owned, and independently-owned seiners are usually chartered to a fishing company for the season.

By owning an equity in, or by chartering a boat, the fishing company obtains the right to purchase the catch or puts the skipper under moral obligation to deliver his catch to the company. By chartering his vessel, the boat owner obtains an assured income from a daily charter fee for a guaranteed number of days. If he is the skipper, he may also draw a bonus for delivering his catch to the company.

To meet commitments for canned salmon in food contracts during World War II and the period following, under the authority of wartime legislation, restrictions were imposed upon the export to the United States of certain species of raw salmon. After the expiry of wartime and emergency legislation, an embargo was in effect from time to time on the export of raw salmon and in 1956 the British Columbia fishing regulations were amended to prohibit the export of fresh coho salmon after August 31 of each year. The export of pink and sockeye salmon in fresh form is generally prohibited.

The schedule of Canadian customs tariff rates on salmon products is as follows:

Tariff Item	Product	British Preferential	Most-Favoured Nation	General
115	Mackerel, herring, salmon & all other fish, n.o.p., fresh, salted, pickled, smoked, dried or boneless (per lb.)	$\frac{1}{2}\phi$	$\frac{3}{4}\phi$ $\frac{1}{2}\phi$ GATT	1 ϕ
123	Fish prepared or preserved n.o.p: (b) Salmon	17 $\frac{1}{2}\%$	27 $\frac{1}{2}\%$ 15% GATT	30%

The United States tariff rates (under GATT) are as follows:

Tariff Paragraph	Product	Rate
717 (a)	Salmon, fresh or frozen, whole or beheaded or eviscerated, or both	$\frac{1}{2}\phi$ /lb.
717 (b)	Salmon, filleted, skinned, boned, sliced or divided	1 $\frac{1}{2}\phi$ /lb.
718 (b)	Salmon, prepared or preserved (canned)	15% ad. val.
719 (1)	Salmon, pickled, or salted	10% ad. val.
720 (a)(1)	Salmon, smoked	10% ad. val.

There are considerable differences in capital costs and in fishing receipts according to the type of boats and gear in use.¹ Three main types of boats are used in salmon fishing: gill-netters, seine boats, and trollers. Gill-net boats are usually within the range of 25 to 35 feet in length and cost \$8,000 to \$10,000 or up to \$15,000. Nets and gear might cost \$1,500-\$2,000 for an entire season in different locations; a nylon gill-net 200 fathoms long costs about \$500 and would last about two years. The average value of fishing capital owned by 64 gill-net fishermen in 1953 and 1954 was about \$3,700 - the boat alone representing about \$2,900; these boats had been owned six years on the average, but they may not have been new when their last owner acquired them.²

For the 64 gill-net fishermen in the two years, the average annual gross receipts were \$3,369, the average operating expenses \$1,434, and the average net operating receipts, accordingly, \$1,935.

1 See D.R. Buchanan and B.A. Campbell, The Incomes of Salmon Fishermen in British Columbia 1953-1954, No. 2, Economics Service, Department of Fisheries of Canada, 1957.

2 The data are not analyzed on an enterprise basis; however, the gill-net fisherman usually owns his own boat and operates it alone or with a wife or son accompanying him in the boat.

After allowance of \$215 a year for depreciation on fishing capital, the average net income from fishing operations was \$1,720.¹ This represented about \$21 a day for an average of 84 fishing days afloat, but the total time spent in fishing operations was more than double that figure, counting week-ends and other closure times during the season and time spent in readying and maintaining boats and gear.

Seine boats range from 45 to 80 feet in length; the drum-seiners are operated by a crew of three or four, but the larger table-seiners use six to eight men. The introduction of the "Puretic" power block in 1955 to replace the hand-hauling of the seine did not greatly affect the number of men employed, but it enabled the seiner to make a larger number of sets per day. A new large seiner, with echo-sounder and other gear, would cost up to \$150 thousand; a 60-65 foot boat might cost \$80 to \$85 thousand. A sample of 25 seiners in 1954 averaged \$29,360 each in current market value and about 20 years in age. The 25 seine nets on those boats were valued at an average \$4,000 each; new salmon seines might cost \$9,000 to \$15,000, according to size. The seine captains owned about 45% of the capital value of the 25 boats and gear, and most of the balance was owned by fishing companies.

The average value of fishing capital owned by the 25 seine captains in 1953 and 1954 was \$17,061, and that of 32 seine assistants was \$710. The average net income from fishing operations, after allowance for depreciation on fishing capital, as well as all operating expenses, was \$5,449 for seine captains and \$2,453 for assistants. The seine captains averaged 92 days afloat in each of the two years and about 178 in fishing operations, while the seine assistants averaged 72 days and 128 days, respectively.

Salmon trollers use boats from 25 to 45 feet long, trailing from long poles four to eight stainless steel lines, with metal flashers, plugs or spoons to attract the fish and three to six hooks to the line. Some operate from a base to which they deliver their catch daily; others may carry ice and remain on the fishing grounds for several days, and these are sometimes manned by two fishermen. The larger boats are also used to fish halibut, and some may mount seine-tables in the fall season to fish local runs of chum salmon. The capital cost of a new boat could be as high as \$25,000. Perhaps \$300 to \$400 would be the cost of gear. A sample of 50 troll boats in 1953 had an average value of nearly \$5,000, and had been in the possession of their owners about nine years. Their owners spent about the same time as seine captains in fishing activities, and received net incomes averaging about \$1,550 after depreciation on fishing capital.

4. Fishermen's Methods of Selling

Gill-net and seine fishermen usually deliver their salmon in the round form to the company packer or collector boat on the fishing

1 Op. cit., Table 7, p. 28.

grounds, and obtain from it necessary supplies for further fishing. Ordinarily, ice is not used, because the packer proceeds straightway to the cannery wharf. Trollers may carry ice, if they do not come in each day with their catch.

The minimum prices for net-caught salmon, negotiated each year between the fishermen's unions and the processors' association, are paid to fishermen as a credit on account at the time of delivery to the collector boat or (infrequently) to the company wharf. The fish are weighed when delivered; pinks and chums are usually counted and the weight computed by applying an average weight as determined for the area. The number of buyers (processing companies) is small, but all pay the minimum contract price; if the fish are scarce or if a high percentage is going into the fresh trade, competition may raise the price to the fishermen above the contract minimum. Troll-caught salmon are not included in the contract; they are usually a better quality of fish sold mainly dressed instead of in the round for the fresh and frozen trade, and the price realized is higher than the minimum for net-caught fish. Sockeye and pink salmon are mostly net-caught and, moreover, mostly canned; consequently, their annual average landed value is usually only fractionally above the season contract minimum price. These differences are indicated in Table 2.

TABLE 2. CONTRACTUAL MINIMUM PRICE AND ANNUAL AVERAGE LANDED VALUE OF BRITISH COLUMBIA SOCKEYE SALMON, 1948-1958

(Cents per Pound)

Year	<u>Sockeye</u>		<u>Pink</u>	
	Contract Minimum Price	Average Landed Value	Contract Minimum Price	Average Landed Value
1948	18.00	20.50	6.75-7.25	7.40
1949	18.00	17.78	6.00-6.50	6.58
1950	20.00	20.13	6.75-7.25	7.09
1951	25.00	25.01	9.50	9.52
1952	25.00	25.00	7.50	8.00
1953	22.00	22.04	7.50	7.33
1954	22.00	22.12	7.75	7.76
1955	24.00	24.05	7.75	8.90
1956	24.00	27.59	9.00	9.03
1957	28.00	28.16	9.25	9.43
1958	28.00	27.58	9.25	9.15

Source: Salmon Basebook, Tables 49 and 50. Data for 1956, 1957 and 1958 from the annual British Columbia Catch Statistics, Department of Fisheries of Canada, and the Monthly Review of Canadian Fisheries Statistics, Dominion Bureau of Statistics.

The co-operatives make an initial payment to the fishermen upon delivery of the fish and a final payment at the end of the season

when the necessary bookkeeping work has been completed.

5. Processing

About a dozen packing companies market British Columbia canned salmon, but three or four account for the greater part of the pack. Some of these operate more than one cannery, and there are a number of custom canneries, but the total number of canneries has declined greatly (to 19 at present) since the First World War as the industry became more concentrated, and some canning firms have gone out of business. There has been little change since 1950. The salmon canneries are highly specialized, although two or three operate on tuna, clams, oysters or herring for limited periods of time, during the closed season for salmon.

The canneries try to maintain a continuous supply of salmon during the fishing season by purchasing on the fishing grounds, sending out packers from base camps along the coast to collect the fish and bring it in to the cannery. Peak supplies are handled by three-shift operation, if necessary, and surplus quantities of raw salmon may be held a short time in ice or refrigerated sea-water.

Because of the relatively high incomes obtainable in alternative occupations in British Columbia, the wage rates for plant labour are higher than on the Atlantic coast. Hourly rates for unskilled labour are around \$1.25 for women and \$1.50 for men, and monthly wages for semi-skilled and skilled trades, \$300 to \$400 a month. These rates represent an increase of perhaps two-thirds over the 1949 level.

The direct labour cost in canning, per case, has increased to a lesser extent - 10% to 20% - since 1949. This indicates a gain in labour productivity - largely, no doubt, through increased capital investment and increased use of power per worker - although many of the major labour-saving technical innovations and improvements in canning processes (such as mechanical handling and beheading and cutting, re-torting, high temperature steam, and automatic closure of the cans) were developed and put into use in earlier periods.

Canneries have warehouse space for storage of current production, and some companies have extensive storage facilities, but some of the pack is shipped to public warehouses serving major marketing areas. The cost of public storage for a year might amount to \$2.50 a case (5¢/lb.), including insurance and interest on the invested capital, hence an attempt is made to clear carry-over stocks by the time the new pack comes on the market (except to the extent that some carry-over is necessary from heavy production years into lean years, to average out the market supply).

Under the Canadian Meat and Canned Foods Act, each shipment of canned salmon, whether for export or domestic sale, must be inspected and a certificate of inspection issued before it passes from the control of the producer. Code marking on the cans must identify the species,

the date of canning, and the name of the packer, and the cases must show the same information. Canned salmon passing inspection as sound, firm, well-packed and in good merchantable condition must bear the word "Canada" embossed on the top of the can. If a parcel of canned salmon does not qualify for a certificate, but is found by the laboratory to be sound, wholesome and fit for human food, before shipment of such a parcel or lot an additional cover embossed "Grade B" must be cemented over the end of each can on which "Canada" is embossed, and such "Grade B" salmon may not be labelled "Fancy", "Choice" or "Standard" or any similar designation. Cannerys may use empty cans embossed "Grade B" instead of "Canada" for a pack which is expected to be passed by the laboratory as "Grade B".

The trade recognizes within the Grade "A" salmon further identifications of "Fancy" and "Standard" and occasionally "Choice". The lower end of "A" quality may be sold in some markets under minor labels. But the small firms seem to be at a disadvantage in the domestic market in that the public generally associates the identification "Fancy" with the brand label.

Further quality differences are recognized by the requirement that other forms of canned salmon be embossed, e.g., "Grade B Tips and Tails", "Grade B Minced Salmon", or such other designation as may be approved by the Department of Fisheries. The principal distinction, of course, is by species. Beyond this, there is certain market differentiation according to brand.

British Columbia canneries processing fish or shellfish for export do not require a permit from the Minister of Fisheries as is the case in the Atlantic Provinces, but canneries are licensed by the Provincial Government and sanitation and operating methods are subject to approval by Department of Fisheries inspectors.

Salmon oil and meal are processed from the offal. Sixty-eight to 70 pounds of raw sockeye salmon are used to produce a standard 48-lb. case of canned sockeye, hence the scrap or offal represents about 22 pounds out of 70 pounds, or 30% to 31% of the landed weight. The average yield from a ton of salmon scrap is 340 pounds of meal and 18 gallons of oil. Salmon offal (frozen) is used also for mink feed. In fish meal production it is commonly mixed with other fish offal.

The periods of operation of the canneries is indicated fairly well by the monthly pattern of salmon landings. (See Appendix Table A2.) The volume of the pack is, of course, dependent upon the size of landings.

Canned salmon is a grocery item like other canned products, and is handled in the same way and on the same terms. Sales are made to wholesalers and chain stores f.o.b. cannery or warehouse. The processors' policy is designed to keep their branded products continuously before the consumers' eyes on retail shelves and the flow of the commodity into markets is adjusted to achieve that end. Efforts are made to retain export markets too, of course, by continuing sales. The large imports of Japanese canned salmon for the domestic market by British

Columbia canning companies during the three years (1956, 1957 and 1958), for instance, enabled the packers to continue export shipments of Canadian salmon to traditional customers.¹

6. Distribution - to Retail

Canned salmon is sold through agents or wholesalers, the brokerage rate ranging from $2\frac{1}{2}\%$ to 5% or 6%. British Columbia Packers maintain their own sales offices in the larger marketing centres. Some of the other firms have exclusive arrangements with brokers, while the canning plants with small volume utilize the services of general food brokerages. A form of field warehousing now generally takes the place of consignment sales, agents being authorized to withdraw specified quantities from stocks held in their area. Sales to chain stores may be direct, or through wholesalers or agents.

Quotations to wholesalers or chain stores are free-on-board plant or warehouse. Some firms give quantity discounts and occasionally special deals are given for promotion, new store openings, and the like. Most processors make co-operative advertising allowances to customers for approved advertising programs, but the amounts so spent are only a fractional percentage of the value of sales.

Average monthly wholesale prices for canned sockeye, per case of 48 "halves", are shown for Vancouver, Toronto and Halifax for the years 1949 to 1958 in Table A4 of the Appendix. From 1953, the Vancouver prices were usually within a dollar or two of the Seattle wholesale price quotations for the same month.² Differences between the Vancouver and Seattle wholesale quotations were often greater in earlier years.

There is not much material available on processors' prices by which the wholesalers' markup can be measured. However, the following season opening prices for canned sockeye were quoted by canning companies, standard case basis, on or about July 1 of each year, unless otherwise specified.³ (See next page.)

Comparison of these quotations for 96 "halves" with the Vancouver average wholesale prices (per case of 48 "halves"), doubled, and lagged two months, indicates a processor to wholesaler markup usually in the range of \$2.00 to \$3.00 a case, or 6% to 10% on the wholesale price.

1 All imported Japanese tinned salmon had to meet Canadian inspection standards, of course. This salmon was sold under Canadian company labels, being designated also a "Product of Japan".

2 Weekly quotations in the Seattle Daily Fishery Report, Market News Services, Bureau of the Commercial Fisheries, U.S. Department of the Interior.

3 From the Salmon Basebook, Table 51, p. 110.

Year	Price in Dollars per Case	
	96 "Halves"	48 "Talls"
1949	33.00	31.50
1950	33.00	31.50
1951	38.00	36.50
1952	35.00	33.50
(September)	33.00	31.50
1953	33.00 ^a	31.50
(November)	30.00	28.50
1954	33.00 ^b	31.50
1955	34.00	32.50
(August)	38.00	36.50

a "Cloverleaf" brand stayed at a price of \$33.00 until the spring of 1954, then dropped to \$31.00.

b In September 1954, brands other than "Cloverleaf" were quoted at \$32.00 per case.

Since September, 1953, the "agreed" freight rate on canned fish from British Columbia to major distributing centres in Ontario and Quebec has been \$2.00 per 100 pounds (minimum carload weight 60,000 lb.). An agreed charge of \$2.00 per 100 pounds from Vancouver or Prince Rupert to Winnipeg (30,000 lb. minimum weight) has also been in effect since February 27, 1956. A schedule of freight rates from British Columbia to various cities in eastern Canada, showing changes since 1949, is given in Table A6 of the Appendix.

Over the past 10 years, freight costs have accounted, in general, for a difference between Vancouver and Toronto or Halifax wholesale prices of 1¢ to 1½¢ per half-pound tin of salmon. Assuming a weight of 30 pounds for a case of 48 "halves" (a tare of 20%), the freight from Vancouver to Toronto or Montreal increased gradually from about 42¢ a case in 1949 to 66¢ in 1953, and has remained at about 60¢ since September, 1953. The freight from Vancouver to Halifax moved from 47¢ to 74¢, approximately, and has remained at 68¢ a case after September, 1953.

As indicated previously, sales of canned sockeye salmon in Canada approximate 300 thousand cases or more than 14 million pounds a year, while an average of 162 thousand cases a year has been sold abroad. Of the very large 1958 pack of 1,079,155 cases of sockeye, presumably about 300 thousand cases would be held for the domestic market and the remainder sold abroad - possibly rationed out over the 1959/60 season, which was expected to be a light production year.¹ Some 550 thousand cases of sockeye were exported in 1958 - all but 7,000 in the last half of the year.

¹ The British Columbia pack of canned sockeye salmon amounted to 256,420 cases in 1959.

7. Retailing, Eating Places, and Consumption

Markups on canned salmon would be expected to be smaller usually than those on fresh and frozen fish because its storage and handling costs are lower. Furthermore, it is a "non-perishable" grocery item and its sales volume would generally exceed that of most fresh or frozen fish items. Retail sales costs are low on canned salmon also because little net advertising cost is incurred. The packers help to finance local advertising and point-of-sale promotions, and much of the advertising is, in fact, brand promotion that is national or at least regional in scope, paid for by the processors.

Average monthly retail prices in Vancouver, Toronto and Halifax for canned sockeye, 1949 to 1958, are shown in Table A4 of the Appendix. Comparison with the wholesale price quotations in the same table shows the retail markup to have been usually in the range of \$1.20 - \$1.60 per case of 96 "halves" from 1949 to 1952, inclusive, but much greater in later years - gradually increasing from \$4.00 to \$6.00. The percentage markup was about 4% in retail price in the first part of the period, and in the vicinity of 11% to 13% afterwards. (See Table A5 of the Appendix.)

The domestic disappearance in Canada of more than 14 million pounds of canned sockeye a year over the 10 years 1949-1958, represents an average consumption of a little less than one pound per person per year. On the same basis, an average domestic disappearance of all species of canned Pacific salmon of 38 million pounds a year amounts to slightly more than $2\frac{1}{2}$ pounds per person. At that rate, canned salmon constitutes about one-fifth of the total annual per capita consumption of fish and shellfish in Canada, in terms of edible weight. The domestic sales of canned British Columbia salmon, all species, and sockeye separately, for the salmon pack-years (July 1-June 30) from 1948/49 to 1955/56 are given on a per person basis in Table 3.

There is some indication that canned salmon constitutes a larger part of family fish purchases in interior cities than in coastal areas where fresh fish is readily available. Sample surveys of family expenditures in five Canadian cities carried out by the Dominion Bureau of Statistics in 1953 and 1955 indicated that, while the 4,500 families reporting in the two surveys spent on canned salmon about 35% of their total expenditures on fish and shellfish products, the proportion in the two surveys was 43% and 48%, respectively, in Toronto, and 38% and 45% in Winnipeg. Vancouver's figures were close to the five-city average of 35%, while family purchases of canned salmon represented, in Montreal, 26% and 31%, and in Halifax, 16% and 23%, of the total expenditures for fish.¹

The large canning companies indicate that intensive national promotion campaigns have been successful in causing a marked increase in

¹ See "Urban Family Expenditures for Fish", Trade News, January, 1957, p. 18, Charts 3 and 4, Department of Fisheries of Canada, Ottawa.

TABLE 3. ANNUAL SALES PER PERSON IN CANADA OF BRITISH COLUMBIA
CANNED SALMON, ALL SPECIES AND SOCKEYE,^a PACK-YEARS
1948/49 TO 1955/56.

Year (July 1-June 30)	Sales in Canada per Person	
	Sockeye (lb.)	All Pacific Salmon (lb.)
1948/49	1.0	2.8
1949/50	0.7	3.2
1950/51	1.1	3.0
1951/52	1.0	2.7
1952/53	1.1	2.7
1953/54	1.3	3.0
1954/55	1.3	2.8
1955/56	0.8	2.4

a Derived from data supplied to the federal Department of Fisheries by the Fisheries Association of British Columbia.

sales of canned salmon in Canada in specific years since the war, when dollar shortages prevented large-scale European buying coincident with heavy pack years. They appear also to believe that consumer demand is price-elastic (temporarily, at least) around the 29-30, 39-40 and 49-50 cent price levels, hence are concerned to maintain the retail price at 29, 39 or 49 cents, as the case may be. However, even if data on changes in sales volume following price changes were available, the evidence would not be conclusive as to demand-elasticity because of other varying factors such as promotion campaigns, seasonal changes in consumption, the changing prices of meats, and changing levels of income.

8. Measurement of the Price Spread, 1949-1958

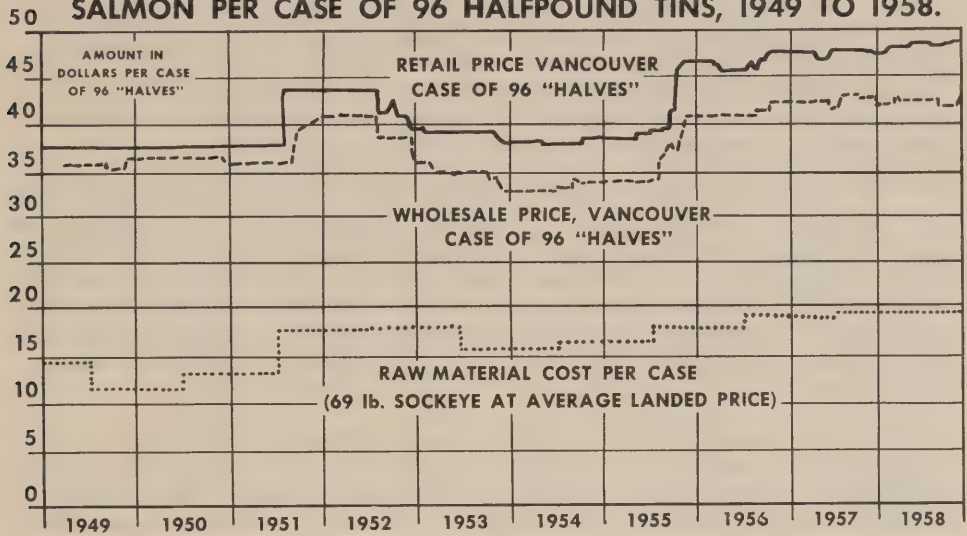
For sockeye salmon, the problem is simplified because it is nearly all canned, and the approximate raw material cost can be computed, therefore, on the basis of 69 pounds of sockeye, landed weight, to the standard 48-pound case of canned sockeye, using the annual average price realized by the fishermen (Table 2) applied from June 1 to May 31 of the following year.

This method of computing the fisherman-to-retail price spread takes no account of any part of the old pack that might be carried over and sold during the new production year. No account is taken either of the (comparatively small) value of salmon offal for the production of meal and oil, which could be considered either as a reduction in the raw material cost to the processor or as a contribution towards his canning costs.

Wholesale and retail prices (from data in Table A4 of the Appendix) and the appropriate raw material cost, all on the basis of the

CHART 1

RAW MATERIAL COST AND AVERAGE MONTHLY WHOLESALE AND RETAIL PRICES AT VANCOUVER OF CANNED SOCKEYE SALMON PER CASE OF 96 HALFPOUND TINS, 1949 TO 1958.



standard 48-pound case, are plotted in Chart 1. These illustrate an increased wholesale-retail spread after the middle of 1953.

The standard 48-pound case is the unit in general use throughout the industry in tabulating production and sales of canned salmon.¹ A different approach is to compute wholesale and retail price-equivalents to one pound of raw salmon as landed by the fishermen, as a basis for the computation of the fishermen's and the retailers' shares of the retail dollar spent in Vancouver for canned sockeye salmon. This was done, and the results appear in Table A5 in the Appendix.

The fishermen's share of the retail dollar varied between 33% and 38% from the beginning of 1949 to the middle of 1951, and it has remained usually near to 40% since, except for some months in 1952/53 and again in 1955/56. The retailers' share of the retail dollar was about 4% until 1953, and has moved between 9% and 12% with some wider variations since that time. Those percentages represent increasing absolute price spreads from 1954, because the retail price was generally rising during the last four years.

The scanty data on packers' season-opening quotations indicate a wholesalers' margin of 6% to 10% on cost, or a slightly smaller percentage of retail price. The retailers' and wholesalers' margins together seldom exceeded 20% of the retail price of canned sockeye, leaving a processors' margin close to the fishermen's share of 40% of the retail dollar. Judging by the (faulty) export value figures per case, the processors received a somewhat smaller markup on export sales.

Data are most scanty on the price realized by the packer, consequently, the estimates of processors' and wholesalers' margins may be wide of the mark. At 1958 prices, a margin to the processor of 35% to 40% of the retail price would be in the range of \$16.50 to \$19.00 a case.

The wholesale and retail margins appear to be small, even with the increases apparent in recent years. Fishermen received large returns from the heavy sockeye catch of 1958, but the average annual net incomes of salmon fishermen may not be higher than the British Columbia average for equivalent skills. There is no doubt that some individual fishermen, through experience and skill or luck, reaped large returns in some years for their labour and capital.

1 Unfortunately, exports are recorded officially in hundreds of pounds, shipping weight, while industry export and production figures are tabulated in numbers of cases for pack years instead of calendar years. Consequently, it is impossible to reconcile the two sets of data within 10% or 15% of variation.

APPENDIX TABLE A1

QUANTITY AND VALUE OF BRITISH COLUMBIA SALMON LANDINGS,
BY SPECIES, 1949 TO 1958

Year	Sockeye	Chum	Coho and Blueback	Pink	Spring Salmon and Steelhead Trout	Total All Species
A. - Quantity in Thousands of Pounds						
1949	19,086	35,907	21,688	55,792	14,895	147,368
1950	29,340	86,036	20,024	35,342	13,958	184,700
1951	29,816	63,491	32,211	60,012	12,064	197,594
1952	30,867	31,862	19,608	51,249	13,379	146,965
1953	35,337	54,425	21,105	61,512	14,535	186,914
1954	47,001	74,399	18,929	25,734	12,799	178,862
1955	16,643	18,178	21,534	63,106	11,549	131,010
1956	21,497	27,427	23,217	28,936	12,451	113,528
1957	15,719	27,238	20,611	56,968	11,361	131,898
1958 ^a	73,182	35,179	21,658	32,746	12,865	175,630
Average						
1949-58	31,849	45,414	22,058	47,140	12,986	159,447
B. - Value in Thousands of Dollars						
1949	3,393	2,568	3,430	3,669	2,596	15,656
1950	5,905	9,000	3,713	2,557	3,161	24,336
1951	7,458	5,999	6,632	5,716	2,591	28,396
1952	7,717	2,349	2,904	4,102	2,483	19,555
1953	7,788	3,782	2,939	4,509	2,830	21,848
1954	10,398	5,453	3,133	1,996	2,599	23,579
1955	4,003	1,799	4,149	5,617	2,913	18,481
1956	5,930	3,317	5,725	2,612	3,772	21,356
1957	4,427	2,426	3,626	5,374	3,032	18,885
1958 ^a	20,181	3,463	5,203	2,995	3,985	35,827
Average						
1949-58	7,720	4,016	4,145	3,915	2,996	22,792

APPENDIX TABLE A1

QUANTITY AND VALUE OF BRITISH COLUMBIA SALMON LANDINGS,
BY SPECIES, 1949 TO 1958 (Cont'd.)

Year	Sockeye	Chum	Coho and Blueback	Pink	Spring Salmon and Steelhead Trout	Total All Species
<u>C. - Average Value in Cents per Pound</u>						
1949	17.8	7.2	15.8	6.6	17.4	10.6
1950	20.1	10.5	18.5	7.2	22.6	13.2
1951	25.0	9.4	20.6	9.5	21.5	14.4
1952	25.0	7.4	14.8	8.0	18.6	13.3
1953	22.0	6.9	13.9	7.3	19.5	11.7
1954	22.1	7.3	16.6	7.8	20.3	13.2
1955	24.1	9.9	19.3	8.9	25.2	14.1
1956	27.6	12.1	24.7	9.0	30.3	18.8
1957	28.2	8.9	17.6	9.4	26.7	14.3
1958 ^a	27.6	9.8	24.0	9.2	31.0	20.4
Average 1949-58	24.0	8.9	18.6	8.3	23.3	14.4

^a Preliminary figures for 1958.

Source: The Commercial Salmon Fisheries of British Columbia, Statistical Basebook Series, No. 3, Table 5, p. 19; Economics Service, Department of Fisheries of Canada, Ottawa, 1958. Also, the Monthly Review of Canadian Fisheries Statistics and Fisheries Statistics of Canada, Dominion Bureau of Statistics.

APPENDIX TABLE A2

VOLUME OF BRITISH COLUMBIA SALMON LANDINGS, SOCKEYE AND ALL SPECIES: AVERAGE FOR EACH MONTH, 1949 TO 1958

(Thousands of Pounds)

Month	Sockeye	All Salmon
January	-	14
February	-	24
March	-	75
April	-	464
May	26	1,363
June	958	4,731
July	16,207	34,084
August	9,698	54,600
September	4,934	33,722
October	138	21,350
November	3	5,242
December	-	49

APPENDIX TABLE A3

QUANTITY AND VALUE OF EXPORTS OF BRITISH COLUMBIA CANNED
SALMON, BY SPECIES, 1949 TO 1958

Year	Sockeye	Chum	Coho	Pink	Pacific N.O.P.	Total All Species
<u>A. - Number of Cases (48-lb.)</u>						
1949	69,611	223,727	79,867	397,697	20,794	791,696
1950	76,429	238,853	64,908	237,095	15,552	632,837
1951	44,446	214,109	32,811	312,129	13,281	616,776
1952	7,885	194,503	16,087	333,818	7,728	560,021
1953	114,668	162,539	94,691	573,141	12,284	957,323
1954	374,931	408,848	49,653	487,498	25,070	1,346,000
1955	117,356	308,524	79,605	355,795	12,568	873,848
1956	157,485	66,075	64,711	321,059	9,827	619,157
1957	109,085	56,252	75,106	210,520	9,623	460,586
1958 ^a	552,686	106,685	88,420	418,849	10,398	1,177,038
Average						
1949-58	162,458	198,012	64,586	364,760	13,712	803,528

B. - Value in Thousands of Dollars

1949	1,729.9	2,678.9	1,593.1	5,512.5	374.3	11,888.7
1950	1,981.1	3,122.1	1,219.0	3,686.1	238.1	10,246.4
1951	1,425.7	3,399.4	792.8	5,629.2	303.5	11,550.6
1952	242.7	2,541.4	272.4	4,994.0	89.6	8,140.1
1953	2,740.5	1,946.2	1,742.8	8,053.0	162.1	14,644.6
1954	10,391.4	4,937.1	993.3	7,175.0	467.8	23,964.6
1955	3,807.5	4,161.1	2,025.0	6,027.3	217.1	16,238.0
1956	5,972.3	1,092.3	1,856.6	5,857.7	199.9	14,978.8
1957	4,084.6	999.4	1,979.9	4,018.4	186.2	11,268.5
1958 ^a	19,259.8	1,570.9	2,111.2	7,528.8	164.4	30,635.2
Average						
1949-58	5,163.5	2,644.9	1,458.6	5,848.2	240.3	15,355.5

APPENDIX TABLE A3

QUANTITY AND VALUE OF EXPORTS OF BRITISH COLUMBIA CANNED
SALMON, BY SPECIES, 1949 TO 1958 (Cont'd.)

Year	Sockeye	Chum	Coho	Pink	Pacific N.O.P.	Total All Species
<u>C. - Average Value in Dollars per Case</u>						
1949	24.85	11.97	19.95	13.86	18.00	15.02
1950	25.92	13.07	18.78	15.55	15.31	16.19
1951	32.07	15.88	24.16	18.03	22.85	18.73
1952	30.78	13.07	16.93	14.96	11.59	14.54
1953	23.90	11.97	18.41	14.05	13.20	15.30
1954	27.72	12.08	20.00	14.72	18.66	17.80
1955	32.44	13.49	25.44	16.94	17.27	18.58
1956	37.92	16.53	28.69	18.24	20.34	24.19
1957	37.44	17.77	26.36	19.09	19.35	24.47
1958 ^a	34.85	14.72	23.88	17.97	15.81	26.03
Average 1949-58	30.79	14.06	22.26	16.34	17.24	19.08

^a Subject to revision.

Source: Trade of Canada, Department of Trade and Commerce, Ottawa; 1949 to 1956 data from Table 47 of The Commercial Salmon Fisheries of British Columbia, Statistical Basebook Series, No. 3, Department of Fisheries of Canada, 1958. Trade of Canada reports quantities in hundredweights: to convert these to cases, a tare factor of 8% was adopted, producing a net weight 92% of the gross reported weight; the net weight was then divided into standard cases of 48 lb. net.

APPENDIX TABLE A4

AVERAGE WHOLESALE AND RETAIL PRICES OF CANNED SOCKEYE SALMON,
GRADE A, BY MONTHS, IN SELECTED CANADIAN CITIES, 1949 TO 1958a

Period	Wholesale Prices			Retail Prices			(\$/case of 96 ½-"Flats")
	(\$/case of 48 ½-lb. "Flats")			(\$/½-lb. "Flat")			
	Vancouver	Toronto	Halifax	Vancouver	Toronto	Halifax	
<u>1949</u>							
Jan.	-	18.12	-	39.0	40.9	-	37.44
Feb.	-	18.08	-	39.0	40.7	-	37.44
Mar.	18.25	18.16	-	39.0	40.6	-	37.44
Apr.	18.25	18.02	-	39.0	40.6	-	37.44
May	18.25	18.10	-	39.0	40.4	-	37.44
June	18.25	19.42	-	39.0	41.0	-	37.44
July	18.25	19.75	-	39.0	42.5	-	37.44
Aug.	17.88	18.47	-	39.0	42.3	-	37.44
Sept.	17.88	18.12	-	39.0	41.1	-	37.44
Oct.	18.12	18.34	-	39.0	40.9	-	37.44
Nov.	18.12	18.75	-	39.0	41.1	-	37.44
Dec.	18.12	19.65	-	39.0	41.4	-	37.44
<u>1950</u>							
Jan.	18.12	20.25	-	39.0	42.1	-	37.44
Feb.	18.12	21.65	-	39.0	42.6	47.3	37.44
Mar.	18.12	22.29	-	39.0	44.1	47.3	37.44
Apr.	18.12	22.56	-	39.0	45.8	47.3	37.44
May	18.12	22.56	-	39.0	46.3	47.3	37.44
June	18.12	22.20	-	39.0	45.7	47.3	37.44
July	18.12	19.86	-	39.0	46.0	47.3	37.44
Aug.	18.00	17.96	-	39.0	42.0	47.3	37.44
Sept.	18.00	17.96	19.17	39.0	40.4	50.0	37.44
Oct.	18.00	18.17	18.98	39.0	40.2	50.0	37.44
Nov.	18.00	18.23	18.86	39.0	40.6	50.0	37.44
Dec.	18.00	18.59	18.86	39.0	41.0	50.0	37.44

APPENDIX TABLE A4

AVERAGE WHOLESALE AND RETAIL PRICES OF CANNED SOCKEYE SALMON,
GRADE A, BY MONTHS, IN SELECTED CANADIAN CITIES, 1949 TO 1958^a
(Cont'd.)

Wholesale Prices				Retail Prices			(\$/case of 96 $\frac{1}{2}$ -lb. "Flats")
	(\$/case of 48 $\frac{1}{2}$ -lb. "Flats")			(\$/ $\frac{1}{2}$ -lb. "Flat")			
Period	Vancouver	Toronto	Halifax	Vancouver	Toronto	Halifax	Vancouver
<u>1951</u>							
Jan.	18.00	19.18	18.86	39.0	41.2	50.0	37.44
Feb.	18.00	20.05	18.86	39.0	42.8	50.0	37.44
Mar.	18.00	20.42	18.86	39.0	43.2	50.0	37.44
Apr.	18.00	20.61	18.83	39.0	42.9	50.0	37.44
May	18.00	20.61	18.83	39.0	42.9	50.0	37.44
June	18.00	19.96	18.83	39.0	44.2	-	37.44
July	18.00	20.01	-	39.0	45.0	-	37.44
Aug.	19.95	20.62	21.74	45.0	45.0	-	43.20
Sept.	19.95	20.71	21.74	45.0	46.2	-	43.20
Oct.	19.95	20.75	21.74	45.0	46.2	-	43.20
Nov.	19.95	20.70	21.74	45.0	46.3	-	43.20
Dec.	20.75	20.70	21.74	45.0	46.2	54.4	43.20
<u>1952</u>							
Jan.	20.75	20.40	21.75	45.0	46.3	54.4	43.20
Feb.	20.75	20.60	21.81	45.0	46.3	-	43.20
Mar.	20.75	20.66	21.81	45.0	46.3	-	43.20
Apr.	20.75	20.56	21.75	45.0	45.6	-	43.20
May	20.75	20.49	21.75	45.0	45.6	-	43.20
June	20.75	20.40	21.80	45.0	45.1	-	43.20
July	19.45	19.01	21.15	45.0	45.3	-	43.20
Aug.	19.38	18.91	20.36	42.0	41.3	-	40.32
Sept.	19.38	17.74	20.11	44.0	42.2	47.7	42.24
Oct.	19.38	17.74	19.59	42.0	40.6	46.5	40.32
Nov.	18.00	17.71	18.98	42.0	40.4	45.0	40.32
Dec.	18.00	17.71	18.98	41.5	40.1	44.6	39.84

APPENDIX TABLE A4

AVERAGE WHOLESALE AND RETAIL PRICES OF CANNED SOCKEYE SALMON,
GRADE A, BY MONTHS, IN SELECTED CANADIAN CITIES, 1949 TO 1958^a
 (Cont'd.)

	Wholesale Prices			Retail Prices			(\$/case of 96 $\frac{1}{2}$ -"Flats")
	(\$/case of 48 $\frac{1}{2}$ -lb. "Flats")			($\phi/\frac{1}{2}$ -lb. "Flat")			
Period	Vancouver	Toronto	Halifax	Vancouver	Toronto	Halifax	Vancouver
1953							
Jan.	18.00	17.76	19.16	41.5	40.3	43.6	39.84
Feb.	18.00	17.82	19.16	41.4	40.1	43.2	39.74
Mar.	17.50	17.76	19.10	40.9	39.8	43.6	39.26
Apr.	17.50	17.76	18.98	40.9	39.6	43.6	39.26
May	17.50	17.90	18.98	40.9	39.5	43.6	39.26
June	17.50	17.96	18.98	40.9	39.6	44.1	39.26
July	17.50	17.96	18.98	40.9	39.5	44.1	39.26
Aug.	17.50	17.84	19.06	40.9	39.8	44.1	39.26
Sept.	17.32	17.84	19.06	40.9	39.8	44.0	39.26
Oct.	17.05	17.84	19.06	39.9	39.8	46.1	38.30
Nov.	16.18	17.18	18.50	39.4	39.3	46.1	37.80
Dec.	16.18	17.18	18.50	39.1	39.0	45.4	37.54
1954							
Jan.	16.18	17.26	18.50	39.1	39.0	45.4	37.54
Feb.	16.18	17.26	18.38	39.1	38.6	45.4	37.54
Mar.	16.18	17.06	18.38	39.1	38.7	45.4	37.54
Apr.	-	17.06	18.38	39.1	38.7	45.4	37.54
May	16.18	17.04	18.06	38.8	38.8	45.5	37.29
June	16.32	16.98	18.22	38.8	38.7	45.5	37.29
July	16.25	16.98	18.22	38.8	38.6	45.5	37.29
Aug.	16.25	16.90	18.36	38.8	38.8	45.0	37.29
Sept.	16.75	18.17	19.26	39.2	39.2	45.2	37.63
Oct.	16.75	17.83	19.11	39.6	39.9	46.0	38.02
Nov.	17.33	17.71	19.11	39.6	40.2	46.0	38.02
Dec.	17.17	17.71	19.11	39.6	40.3	45.8	38.02

APPENDIX TABLE A4

AVERAGE WHOLESALE AND RETAIL PRICES OF CANNED SOCKEYE SALMON,
GRADE A, BY MONTHS, IN SELECTED CANADIAN CITIES, 1949 TO 1958^a
(Cont'd.)

	<u>Wholesale Prices</u>			<u>Retail Prices</u>			(\$/case of 96 $\frac{1}{2}$ "-Flats")
	(\$/case of 48 $\frac{1}{2}$ -lb. "Flats")			(\$/ $\frac{1}{2}$ -lb. "Flat")			$\frac{1}{2}$ "-Flats")
Period	Vancouver	Toronto	Halifax	Vancouver	Toronto	Halifax	Vancouver
<u>1955</u>							
Jan.	17.17	17.76	19.11	39.6	40.2	45.8	38.02
Feb.	17.17	17.76	19.11	39.6	40.2	45.8	38.02
Mar.	17.00	17.76	19.11	39.6	40.2	45.8	38.02
Apr.	17.00	17.76	19.11	39.6	40.2	46.2	38.02
May	17.17	18.02	19.31	40.0	40.2	46.7	38.40
June	17.17	18.02	19.31	40.0	40.2	46.7	38.40
July	17.33	18.57	19.52	40.5	40.2	46.7	38.88
Aug.	18.20	19.34	19.52	41.2	40.3	47.0	39.55
Sept.	18.87	20.98	22.19	42.8	45.2	49.3	41.09
Oct.	20.32	20.98	22.19	47.0	46.2	50.9	45.12
Nov.	20.32	21.00	22.19	47.8	46.5	50.9	45.89
Dec.	20.32	21.00	22.19	48.0	46.9	51.6	46.08
<u>1956</u>							
Jan.	20.32	21.08	22.19	48.0	47.3	52.4	46.08
Feb.	20.32	20.84	22.19	48.0	47.2	52.4	46.08
Mar.	20.32	21.25	22.19	47.8	47.0	52.1	45.89
Apr.	20.32	21.46	22.19	47.8	47.7	52.1	45.89
May	20.32	21.35	22.19	47.8	48.0	53.1	45.89
June	-	21.30	22.19	47.8	48.2	53.1	45.89
July	-	21.07	22.19	48.0	48.1	53.1	46.08
Aug.	20.40	21.07	22.19	47.8	48.1	53.0	45.89
Sept.	20.73	22.08	23.38	48.0	48.4	53.2	46.08
Oct.	21.47	22.15	23.38	49.2	49.2	53.8	47.23
Nov.	21.47	21.99	23.38	49.5	49.4	53.8	47.52
Dec.	21.47	21.99	23.38	49.5	49.4	53.8	47.52

APPENDIX TABLE A4

AVERAGE WHOLESALE AND RETAIL PRICES OF CANNED SOCKEYE SALMON,
GRADE A, BY MONTHS, IN SELECTED CANADIAN CITIES, 1949 TO 1958^a
(Cont'd.)

Period	<u>Wholesale Prices</u>			<u>Retail Prices</u>			(\$/case of 96 $\frac{1}{2}$ -"Flats")
	(\$/case of 48 $\frac{1}{2}$ -lb. "Flats")			($\phi/\frac{1}{2}$ -lb. "Flat")			
	Vancouver	Toronto	Halifax	Vancouver	Toronto	Halifax	Vancouver
<u>1957</u>							
Jan.	21.47	21.99	23.38	49.5	49.6	53.8	47.52
Feb.	21.47	21.89	23.38	49.5	49.5	54.0	47.52
Mar.	21.47	21.73	23.38	49.2	49.7	54.5	47.23
Apr.	21.47	21.73	23.38	48.4	49.7	54.4	46.46
May	21.40	21.73	23.38	48.4	49.7	54.4	46.46
June	21.40	21.86	23.38	49.2	49.7	54.1	47.23
July	21.57	21.86	23.38	49.3	49.7	54.1	47.33
Aug.	21.57	21.86	23.38	49.1	49.7	54.1	47.14
Sept.	21.57	22.06	23.38	49.1	49.7	54.9	47.14
Oct.	21.47	22.06	23.38	49.1	49.7	55.1	47.14
Nov.	21.47	22.06	23.38	48.9	49.7	54.9	46.94
Dec.	21.47	22.05	23.38	48.9	49.3	54.6	46.94
<u>1958</u>							
Jan.	21.13	22.01	22.79	48.9	49.7	54.6	46.94
Feb.	21.13	21.92	22.79	49.6	49.7	54.6	47.62
Mar.	21.13	21.87	22.79	49.6	49.7	54.3	47.62
Apr.	21.20	21.90	22.79	49.6	49.5	53.8	47.62
May	21.20	22.04	22.79	50.5	49.1	55.1	48.48
June	21.20	21.94	22.79	50.5	49.6	55.0	48.48
July	21.20	21.94	22.79	50.2	49.2	54.9	48.19
Aug.	21.20	22.02	22.79	50.0	49.2	55.0	48.00
Sept.	20.87	21.02	22.54	50.1	49.1	55.0	48.10
Oct.	20.20	21.02	22.29	49.1	48.0	54.5	47.14
Nov.	20.20	21.22	22.03	49.2	47.7	54.5	47.23
Dec.	21.20	21.63	22.53	49.8	47.9	54.3	47.81

a The Commercial Salmon Fisheries of British Columbia, Statistical Basebook Series, No. 3, Department of Fisheries of Canada, Tables 56 and 62; for years after 1956, the Monthly Review of Canadian Fisheries Statistics, Dominion Bureau of Statistics.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE

Period	Vancouver Retail Price (¢/½-lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye	Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread	Retailers' Share of Retail Value	Fishermen's Share of Retail Value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1949							
Jan.	39.0	54.3	-	20.5	18.5	-	38
Feb.	39.0	54.3	-	20.5	18.5	-	38
Mar.	39.0	54.3	-	20.5	18.5	-	38
Apr.	39.0	54.3	52.9	20.5	18.5	3	38
May	39.0	54.3	52.9	20.5	18.5	3	38
June	39.0	54.3	52.9	18.0	21.0	3	33
July	39.0	54.3	52.9	18.0	21.0	3	33
Aug.	39.0	54.3	52.9	18.0	21.0	3	33
Sept.	39.0	54.3	51.8	18.0	21.0	5	33
Oct.	39.0	54.3	51.8	18.0	21.0	5	33
Nov.	39.0	54.3	52.5	18.0	21.0	3	33
Dec.	39.0	54.3	52.5	18.0	21.0	3	33

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢/½-lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye	Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread	Retailers' Share of Retail Value	Fishermen's Share of Retail Value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1950							
Jan.	39.0	54.3	52.5	18.0	21.0	3	33
Feb.	39.0	54.3	52.5	18.0	21.0	3	33
Mar.	39.0	54.3	52.5	18.0	21.0	3	33
Apr.	39.0	54.3	52.5	18.0	21.0	3	33
May	39.0	54.3	52.5	20.1	18.9	3	37
June	39.0	54.3	52.5	20.1	18.9	3	37
July	39.0	54.3	52.5	20.1	18.9	3	37
Aug.	39.0	54.3	52.5	20.1	18.9	4	37
Sept.	39.0	54.3	52.2	20.1	18.9	4	37
Oct.	39.0	54.3	52.2	20.1	18.9	4	37
Nov.	39.0	54.3	52.2	20.1	18.9	4	37
Dec.	39.0	54.3	52.2	20.1	18.9	4	37

Explanatory notes on the column headings are given on p. 443.

APPENDIX TABLE A5

COMPARATIVE WHOLESAL AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price ($\frac{1}{2}$ -lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye	Average Landed Price of Raw Sockeye ($\frac{1}{2}$ -lb.)	Fishermen -Retail Spread	Retailers' Share of Retail Value	Fishermen's Share of Retail Value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1951							
Jan.	39.0	54.3	52.2	20.1	18.9	4	37
Feb.	39.0	54.3	52.2	20.1	18.9	4	37
Mar.	39.0	54.3	52.2	20.1	18.9	4	37
Apr.	39.0	54.3	52.2	20.1	18.9	4	37
May	39.0	54.3	52.2	20.1	18.9	4	37
June	39.0	54.3	52.2	25.0	14.0	4	46
July	39.0	54.3	52.2	25.0	14.0	4	46
Aug.	45.0	62.6	52.2	25.0	20.0	17	40
Sept.	45.0	62.6	57.8	25.0	20.0	8	40
Oct.	45.0	62.6	57.8	25.0	20.0	8	40
Nov.	45.0	62.6	57.8	25.0	20.0	8	40
Dec.	45.0	62.6	57.8	25.0	20.0	8	40

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢/½-lb. tin) (1)	Retail Value of Canned per lb. of Sockeye as Landed (¢) (2)	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye (¢) (3)	Average Landed Price of Raw Sockeye (¢/lb.) (4)	Fishermen -Retail Spread (¢) (5)	Retailers' Share of Retail Value (%) (6)	Fishermen's Share of Retail Value (%) (7)
1952							
Jan.	45.0	62.6	60.1	25.0	20.0	4	40
Feb.	45.0	62.6	60.1	25.0	20.0	4	40
Mar.	45.0	62.6	60.1	25.0	20.0	4	40
Apr.	45.0	62.6	60.1	25.0	20.0	4	40
May	45.0	62.6	60.1	25.0	20.0	4	40
June	45.0	62.6	60.1	25.0	20.0	4	40
July	45.0	62.6	60.1	25.0	20.0	4	40
Aug.	42.0	58.4	56.4	25.0	17.0	3	43
Sept.	44.0	61.2	56.2	25.0	19.0	8	41
Oct.	42.0	58.4	56.2	25.0	17.0	4	43
Nov.	42.0	58.4	56.2	25.0	17.0	4	43
Dec.	41.5	57.7	52.2	25.0	16.5	10	43

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢/½-lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye	Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread	Retailers' Share of Retail Value (%)	Fishermen's Share of Retail Value (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1953							
Jan.	41.5	57.7	52.2	25.0	16.5	10	43
Feb.	41.4	57.6	52.2	25.0	16.4	9	43
Mar.	40.9	56.9	52.2	25.0	15.9	8	44
Apr.	40.9	56.9	50.7	25.0	15.9	11	44
May	40.9	56.9	50.7	25.0	15.9	11	44
June	40.9	56.9	50.7	22.0	18.9	11	39
July	40.9	56.9	50.7	22.0	18.9	11	39
Aug.	40.9	56.9	50.7	22.0	18.9	11	39
Sept.	40.9	56.9	50.7	22.0	18.9	11	39
Oct.	39.9	55.5	50.2	22.0	17.9	10	40
Nov.	39.4	54.8	49.4	22.0	17.4	10	40
Dec.	39.1	54.4	46.9	22.0	17.1	14	40

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢ 1/2-lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye	Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread	Retailers' Share of Retail Value	Fishermen's Share of Retail Value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1954							
Jan.	39.1	54.4	46.9	22.0	17.1	14	40
Feb.	39.1	54.4	46.9	22.0	17.1	14	40
Mar.	39.1	54.4	46.9	22.0	17.1	14	40
Apr.	39.1	54.4	46.9	22.0	17.1	14	40
May	38.8	54.0	-	22.0	16.8	-	41
June	38.8	54.0	46.9	22.1	16.7	13	41
July	38.8	54.0	47.3	22.1	16.7	12	41
Aug.	38.8	54.0	47.1	22.1	16.7	13	41
Sept.	39.2	54.5	47.1	22.1	17.1	14	41
Oct.	39.6	55.1	48.6	22.1	17.5	12	40
Nov.	39.6	55.1	48.6	22.1	17.5	12	40
Dec.	39.6	55.1	50.2	22.1	17.5	9	40

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢/½-lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye	Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread (¢)	Retailers' Share of Retail Value (%)	Fishermen's Share of Retail Value (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1955							
Jan.	39.6	55.1	49.8	22.1	17.5	10	40
Feb.	39.6	55.1	49.8	22.1	17.5	10	40
Mar.	39.6	55.1	49.8	22.1	17.5	10	40
Apr.	39.6	55.1	49.3	22.1	17.5	10	40
May	40.0	55.6	49.3	22.1	17.9	11	40
June	40.0	55.6	49.8	24.1	16.0	10	43
July	40.5	56.3	49.8	24.1	16.5	12	43
Aug.	41.2	57.3	50.2	24.1	17.2	12	42
Sept.	42.8	59.5	52.8	24.1	18.8	11	40
Oct.	47.0	65.4	54.7	24.1	23.0	16	37
Nov.	47.8	66.5	58.9	24.1	23.8	11	36
Dec.	48.0	66.8	58.9	24.1	24.0	12	36

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢/½-lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye	Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread	Retailers' Share of Retail Value	Fishermen's Share of Retail Value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>1956</u>							
Jan.	48.0	66.8	58.9	24.1	24.0	12	36
Feb.	48.0	66.8	58.9	24.1	24.0	12	36
Mar.	47.8	66.5	58.9	24.1	23.8	11	36
Apr.	47.8	66.5	58.9	24.1	23.8	11	36
May	47.8	66.5	58.9	24.1	23.8	11	36
June	47.8	66.5	58.9	24.1	23.8	11	36
July	48.0	66.8	-	27.6	20.4	-	41
Aug.	47.8	66.5	-	27.6	20.2	-	42
Sept.	48.0	66.8	59.1	27.6	20.4	12	41
Oct.	49.2	68.4	60.1	27.6	21.6	12	40
Nov.	49.5	68.9	62.2	27.6	21.9	10	40
Dec.	49.5	68.9	62.2	27.6	21.9	10	40

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢/½ lb. tin)	Retail Value		Wholesale Value		Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread (¢)	Retailers' Share of Retail Value (%)	Fishermen's Share of Retail Value (%)
		(1)	(2)	(3)	(4)				
		(1)	(2)	(3)	(4)		(5)	(6)	(7)
1957									
Jan.	49.5	68.9	62.2	27.6	21.9	10	40		
Feb.	49.5	68.9	62.2	27.6	21.9	10	40		
Mar.	49.2	68.4	62.2	27.6	21.6	9	40		
Apr.	48.4	67.3	62.2	27.6	20.8	8	41		
May	48.4	67.3	62.2	27.6	20.8	8	41		
June	49.2	68.4	62.0	28.2	21.0	9	41		
July	49.3	68.6	62.0	28.2	21.1	10	41		
Aug.	49.1	68.3	62.5	28.2	20.9	8	41		
Sept.	49.1	68.3	62.5	28.2	20.9	8	41		
Oct.	49.1	68.3	62.5	28.2	20.9	8	41		
Nov.	48.9	68.0	62.2	28.2	20.7	8	41		
Dec.	48.9	68.0	62.2	28.2	20.7	8	41		

Explanatory notes on the column headings are given on p. 448.

APPENDIX TABLE A5

COMPARATIVE WHOLESALE AND RETAIL VALUES OF CANNED SOCKEYE SALMON AT VANCOUVER PER POUND OF RAW
SALMON; RETAILERS' AND FISHERMEN'S SHARE OF THE RETAIL DOLLAR FOR CANNED SOCKEYE (Cont'd.)

Period	Vancouver Retail Price (¢/½ lb. tin)	Retail Value of Canned per lb. of Sockeye as Landed (¢)	Wholesale Value of Canned in the Previous Month per lb. of Raw Sockeye (¢)	Average Landed Price of Raw Sockeye (¢/lb.)	Fishermen -Retail Spread (¢)	Retailers' Share of Retail Value (%)	Fishermen's Share of Retail Value (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1958							
Jan.	48.9	68.0	62.2	28.2	20.7	8	41
Feb.	49.6	69.0	61.2	28.2	21.4	11	41
Mar.	49.6	69.0	61.2	28.2	21.4	11	41
Apr.	49.6	69.0	61.2	28.2	21.4	11	41
May	50.5	70.3	61.4	28.2	22.3	13	40
June	50.5	70.3	61.4	28.0	22.5	13	40
July	50.2	69.8	61.4	28.0	22.2	12	40
Aug.	50.0	69.6	61.4	28.0	22.0	12	40
Sept.	50.1	69.7	61.4	28.0	22.1	12	40
Oct.	49.1	68.3	60.5	28.0	21.1	11	41
Nov.	49.2	68.4	58.6	28.0	21.2	14	41
Dec.	49.8	69.3	58.6	28.0	21.8	15	40

Explanatory notes on the column headings are given on p. 448.

- Column (1): First-of-month average retail prices reported by Dominion Bureau of Statistics in the Monthly Review of Canadian Fisheries Statistics. See Table A4 preceding.
- Column (2): Assuming 69 lb. of raw sockeye are used per standard case of 96 "halves", the retail value equivalent to one pound of raw sockeye is obtained by multiplying the retail price of a half-pound tin by $\frac{96}{69}$.
- Column (3): Average wholesale prices for canned sockeye salmon reported in the Monthly Review of Canadian Fisheries Statistics are for 48 half-pound tins (one-half of a standard case). The wholesale value equivalent to one pound of raw sockeye is therefore obtained by multiplying the wholesale price by $\frac{2}{69}$. Wholesale prices are mid-month quotations, consequently the equivalent wholesale value has been computed for a given month from the wholesale price quotation for the preceding mid-month. In this way the retailers' margin (used to compute the retailers' share of retail value in Column (6)) is determined by deducting from the first-of-the-month retail value (Column (2)), the wholesale value (Column (3)) of the mid-month previous.
- Column (4): Average landed value of sockeye (Table 2 above) applied over the pack year June to the following May.
- Column (5): Landed value deducted from equivalent retail value for a pound of raw sockeye - Column (2) minus Column (4).
- Column (6): "Column (2) minus Column (3)" as a percentage of Column (2).
- Column (7): Column (4) as a percentage of Column (2).

APPENDIX TABLE A6

FREIGHT RATES ON CANNED FISH, BOXED, FROM BRITISH COLUMBIA TO EASTERN CANADIAN DESTINATIONS^a

(Cents per 100 Pounds)

Effective Date	TO:		St. John, N.B.	Halifax, N.S.		Sydney, N.S.	Yarmouth, N.S.	Port au Basques, Nfld.	St. John's, Nfld.
	Windsor	Quebec City		Toronto	Charlottetown, P.E.I.				
Oct. 1/49	140	155	157	171	162	171	204		
July 26/51	157	173	176	192	182	192	229		
Feb. 11/52	164	181	184	200	190	200	239		
Mar. 1/52	181	201	203	220	210	220	262		
Apr. 21/52	190	209	212	230	219	230	274		
Jan. 28/53	207	229	231	251	239	251	312		
Mar. 16/53	221	245	247	269	256	269	320		
Sept. 17/53	200	222	227	247	234	247	293		

^a Source: Canada Department of Agriculture, Economics Branch. September, 1953, rates on minimum car-load weight of 60,000 lb. Other rates on 70,000 lb. minimum.

PACIFIC HALIBUT

A. The Raw Material

The halibut¹ belongs to the demersal or groundfish ("bottom-feeding") group of fish species, although it occasionally rises to the surface in quest of food. Female halibut grow faster than males, maturing in eight to 16 years, and may live beyond 35 years and reach a length of more than eight feet and a weight, occasionally, of more than 500 pounds. The males mature earlier and may reach, infrequently, an age of 25 years, a length of $4\frac{1}{2}$ feet, and a weight of 40 pounds.

Being a relatively large fish, halibut can be handled individually at a fast rate in unloading, packing and processing, but the final consumer would seldom be able to use a whole fish; it is marketed as fresh or frozen steaks, fillets or chunks. Fish under 10 pounds (Chix) and grey or damaged fish (No. 2s) bring a lower price per pound. After the fish are caught, quality depends upon rapid chilling or freezing to arrest organic and bacterial deterioration of the flesh and upon care and cleanliness in handling and processing.

B. Disposition of the Catch

Landings of halibut in British Columbia in 1958 amounted to 23.7 million pounds, and a further 5.1 million pounds was landed by Canadian fishing vessels in United States and Alaskan ports. Total landings of Pacific halibut by both Canadian and United States vessels amounted to 65 million pounds. Accordingly, Canadian fishermen accounted for nearly 45% of the 1958 catch.

During the 10-year period, 1949 to 1958, Canadian fishermen landed an average of close to 22 million pounds of halibut a year in British Columbia ports and almost 24 million pounds a year, including deliveries in Alaska and Washington. This was about 39% of the combined Canadian and American average catch of 61.5 million pounds a year. Landings of Pacific halibut by British Columbia fishermen have, in recent years, constituted 80% to 85% of the total Canadian halibut catch. Thus the Atlantic halibut landings are a relatively small part of the total.

The British Columbia processors ship halibut chiefly in the fresh and frozen (headless) dressed forms and as frozen steaks, fillets and flitches. Over the six years, 1952 to 1957, about two-thirds of the halibut landed in British Columbia was sold by processors in the frozen dressed form, and about one-sixth as fresh dressed. Frozen halibut

1 The Pacific halibut, Hippoglossus stenolepis, is distinguished from the Atlantic halibut, Hippoglossus hippoglossus, by certain scale characteristics that have given it its specific name.

TABLE 1. LANDINGS OF PACIFIC HALIBUT, 1949-58: BY CANADIAN VESSELS IN BRITISH COLUMBIA AND IN UNITED STATES PORTS, AND TOTAL BY CANADIAN AND AMERICAN VESSELS

Year	CANADIAN LANDINGS ^a			TOTAL LANDINGS ^a		
	In British Columbia Ports		In U.S. Ports	Canadian and American		Canadian Landings as Percentage of Total (%)
	Landings (thousand lb.)	Value to Fishermen (\$ thousand)		Canadian (thousand lb.)	and American (thousand lb.)	
1949	17,997	2,785	683 ^a	18,746	55,066	34
1950	18,882	3,837	70 ^a	18,884	57,283	33
1951	20,214	3,429	561 ^a	21,020	56,078	37
1952	23,488	3,955	1,129 ^a	24,719	62,333	40
1953	24,882	3,661	1,091	25,738	59,865	43
1954	25,200	3,984	2,253	27,526	71,206	39
1955	19,679	2,555	2,354	22,148	59,110	38
1956	23,316	5,067	2,045	25,596	67,505	38
1957	22,542	3,673	2,220	24,714	61,355	40
1958	23,707	4,902	5,145	29,020	65,034	45
Average (1949-58)	21,991	3,785	1,755	23,811	61,484	39

^a Pacific Fisherman, Yearbook Number, January 25, 1959, p. 201. It will be observed that there are small differences between the Canadian and the American figures on the Canadian catch.

Source: Economics Service, Department of Fisheries of Canada, Ottawa.

fillets represented about 10% of landings. The production of frozen flitches and chunks, over the six years about half that of fillets, has been increasing, and in 1957 it equalled that of frozen fillets. Processors' output of frozen steaks represented only 3% of landings but, of course, the greater part of fresh or frozen dressed halibut becomes steaks at the wholesale or retail level.¹

Canadian exports of fresh and frozen dressed halibut over the nine years, 1950-58, amounted to an average of 13.1 million pounds a year, of which 9.8 million, or three-quarters, was frozen. (See Appendix Table A1.) Including exports of fillets adjusted to landed weight, the total exports might average about 15.4 million pounds a year (landed weight). This would represent about 63% of the 24.4 million pounds landed by Canadian fishermen, including their landings in United States ports.

The domestic disappearance of halibut is computed as about 8.5 million pounds, landed weight, a year over the nine years, or close to 35% of the total landings by Canadian fishermen, both in home ports and United States ports.

C. Conditions of Production, Organization of the Fishery and Institutional Factors

Halibut are caught with line-gear, for the most part in waters 30 to 250 fathoms deep, but down to 600 fathoms. A few are caught by trollers. A large halibut boat might be 60 to 80 feet long, with a crew of six men, fishing about 60 skates or bundles of gear, each skate consisting of a ground line (long-line) to which the shorter lines bearing the hooks are attached.

Halibut are found on the continental shelf from the Strait of Juan de Fuca to the Aleutian Islands. The principal fishing grounds are west of Vancouver Island and the Queen Charlotte Islands, in Hecate Strait, in Dixon Entrance and off the Alaskan coast. With the growth of the Canadian fleet of big modern long-liners, increasing quantities are being brought in from the Gulf of Alaska and the Bering Sea.

Usually the areas of greatest concentration are heavily fished; these are only a small part of the total area and the stocks are apparently replenished from the other parts. The all-time record trip by a North Pacific long-liner, for instance, was taken by the Silver Bounty in 1958 on the Horseshoe Ground in central Hecate Strait - among the most heavily fished of all halibut banks. The record fare, landed at Prince Rupert, was 153,000 pounds - two-thirds of it large halibut.

1 Data on the manufactured products, here summarized, are from Table 3 in the annual Fisheries Statistics of British Columbia, published by the Canadian Department of Fisheries in Vancouver. A flitch is merely a long fillet, being the side of a hog or of a halibut, as defined in the Oxford Dictionary. The British Columbia industry generally uses the term "fletch", probably as a corruption of the original term. The Pacific Fisherman (Portland, Oregon) uses "flitch".

Evidently, the Silver Bounty met a newly-arrived stock.¹

Roughly two-thirds of the British Columbia halibut catch in recent years has been landed in the Prince Rupert-Butedale area; the proportion was higher - 75% to 80% - during the early '50's. The balance was landed farther south, viz., at Namu, Vancouver, New Westminster and Vancouver Island points.² Upon occasion, when a glut occurs at Prince Rupert, some fish is brought down to Vancouver by packer boats.

The catch of halibut is regulated by the International Pacific Halibut Commission; quotas are set for each area or sub-area and the season is closed when the quota has been taken. Landings are heaviest in May and June when the season is open in Area 2 - from Willapa Bay off Washington State to Cape Spencer in Alaska. This is the area in which the British Columbia small boat or "mosquito" fleet operates. The season for 1958 in Area 2 opened on May 4 and closed on July 2; a second season for Area 2 opened for seven days from August 31 to September 7. The season was extended in 1958 for Area 3 - all grounds west of Cape Spencer; in particular, vessels were able to fish west of the Shumagin Islands and in the Bering Sea during April and again in a late season until October 16 without quota. The 1958 regulations also opened to fishing the long-closed Area 1 "nursery grounds".³

The monthly pattern of British Columbia halibut landings is shown by the data in Table A3 of the Appendix.

The first treaty for joint Canadian-United States regulation of the halibut fishery was negotiated in 1924, creating the Northern Pacific Halibut Commission. The treaty was revised in 1930, 1937 and 1953; the 1953 convention changed the name of the regulatory body from "The International Fisheries Commission" to "The International Pacific Halibut Commission".

An annual catch quota has been in effect since the beginning of regulation, and there has been an undeniable recovery of halibut stocks in the past 20 years. However, the part played by conservation measures in this recovery is the subject of debate; higher water temperatures and a growth in recruitment resulting from the reduction in density of the stocks may have been important factors.

The regulation of the catch has had among its effects the shortening of the fishing season and the building up of a high capital cost structure in the halibut fishery. Competition among fishermen for

1 Pacific Fisherman, Yearbook Number, January 25, 1959, p. 202. A few days earlier, the Silver Viking landed 141,000 pounds from the Bering Sea.

2 Pacific Fisherman, Yearbook Number, January 25, 1959, p. 201.

3 British Columbia Catch Statistics, 1958, Department of Fisheries of Canada, Pacific Area, p. 2.

a larger share of the quota has brought about a progressive increase in capital investment in more and better boats and gear, so that the quota is now taken in a few weeks of fishing, even with a voluntary arrangement for an eight-day boat lay-up after each trip. The concentration of the catch into a few months has required also the provision of greater capacity in processing, storing and marketing halibut. In addition, a greater proportion of the catch must be sold in the frozen form rather than fresh, and there is inevitably some deterioration in the quality of frozen halibut stored for many months in order to provide a supply over 12 months of the year.

The fishermen are represented by a number of organizations, including the United Fishermen and Allied Workers Union, the Native Brotherhood of British Columbia, the Deep Sea Fishermen's Union of Prince Rupert, the Fishing Vessel Owners' Association of British Columbia, and the Fishing Vessel Owners' Association of Prince Rupert. The Vessel Owners' Associations and the fishing companies negotiate with the fishermen's unions the share arrangements to apply to crews on the various types of halibut boats.

The British Columbia fishermen's organizations in conferences with others representing Washington and Alaskan ports, agreed to adopt a schedule of lay-up rules for the Pacific coast. These were designed to obviate temporary gluts during the peak production periods with their adverse effects on the auction price levels - in effect, to produce a lengthening of the season. According to the rules adopted for 1958, all halibut vessels were required to serve a lay-up time of eight days at home port or plant of sale following each trip. One or two-man halibut boats delivering at camps, scows or packers were designated as "camp boats"; these could fish 12 days, then must tie up for eight days, and for the balance of the season must alternate 10 days' fishing and eight days' tie-up. To avoid hardship to salmon trollers, ice packer trollers were permitted to land 3,000 pounds of halibut at ports or plants in any trip or in any seven-day period without being subject to the eight-day lay-up. Standard travelling times between specified ports were laid down, and vessels travelling from their port of sale to home port after a trip had the standard time added to their eight-day lay-up period if their home port was nearer to the fishing grounds than the port of sale, or subtracted from their lay-up time if their home port was farther from the grounds. Halibut fishermen are required to contribute 50¢ per thousand pounds of halibut landed to the Halibut Curtailment Fund; on vessels owned by members of the Fisheries Association, the deduction is 40¢ per thousand pounds.

Halibut vessels are insured against loss or damage, but the boat insurance does not cover loss of catch or of supplies, and loss of the catch or loss of the season is a considerable risk when the season is so short. Halibut trip insurance was started in Vancouver in 1950; currently, it is operated as the British Columbia Trip Insurance Pool, on a charge of 50¢ per \$100 worth of fish for vessels fishing in Area 3, and 40¢ per \$100 in Area 2, covering loss of catch and supplies from burning, stranding, sinking, collision, and breakdowns of steering gear, propelling machinery, light-plant, gurdy or other machinery

connected with the fishing operations. Administration of the Pool is by a board of eight trustees - representatives of the United Fishermen and Allied Workers Union (3), the Vancouver Vessel Owners (2), the Prince Rupert Vessel Owners (1), the fishing companies (1), and the Deep Sea Fishermen's Union of Prince Rupert (1).

The Prince Rupert Fishermen's Co-operative Association handles an important share (up to one-half) of the halibut landed at Prince Rupert. The Vancouver business of the Co-operative is handled by the British Columbia Ice Company - including one-half to three-quarters of a million pounds of halibut, much of it from camps along the west coast of Vancouver Island. The Co-operative deducts 10% of the gross payments for fish landed, 5% going into share capital (which is now interest bearing) and 5% into the members' Special Loan Fund, bearing interest at 4%. A member can borrow from this Fund at 6%, or withdraw his share from it upon one year's notice. Occasionally the Co-operative Association floats a special debenture issue for an increase in packer boat investment or additions to cold storage or plant facilities. The Association does not finance fishermen now; this service is provided by their credit unions - e.g., the Gulf and Fraser Fishermen's Credit Union.

The Prince Rupert Co-operative puts up its own ice and bait, selling them at cost. It provides good unloading facilities and a good store service. A large sea-water chiller was installed on the dock about two years ago, in which landed fish can be kept at a temperature close to the freezing point.

The United States customs duty rate on fresh or frozen dressed halibut is $\frac{1}{2}$ ¢ a pound (under Tariff Para. 717a), and $1\frac{1}{2}$ ¢ on halibut fillets (Tariff Para. 717b).

The Canadian Most-Favoured-Nation tariff rate on halibut negotiated under the General Agreement on Tariffs and Trade is $\frac{1}{2}$ ¢ a pound (Tariff Item 116). Very little halibut is imported into Canada; landings by United States boats in Canadian ports are for the most part shipped in bond to the United States.

Halibut boats come in many types and sizes; the new large boats are now adaptable for use in other fisheries, being equipped with a seine-table for use on salmon or herring. On others, a seine-table is mounted after the peak halibut season, for use in fishing the later salmon runs. The cost range for a new boat would be \$70,000 to \$100,000 - the latter figure for a combination seiner-halibut boat of, say, 72 feet. A string of halibut gear would cost up to \$5,000 initially. A salmon seine net would cost up to \$15,000; a herring seine, even more. The herring seine net is usually owned by a fishing company.

The 1957 inventory of boats in British Columbia included 36 long-liners averaging about 16 tons in size and \$15,000 in value, 39 seiner-long-liners averaging 29 tons and \$37,400, and 40 long-liner-packers averaging about 33 tons and \$28,400. The value of 10,014 skates

of gear was \$460,000, or about \$46 each.¹

Halibut gear would give about two seasons' wear at the maximum, but losses are sometimes heavy. Out of the equipment of 60 skates of gear, costing about \$60 per skate, the value of seven or eight skates would be charged off to depreciation after each trip. This would be deducted from the gross or boat stock, then a boat share of 20% would be deducted, leaving a net stock against which oil, fuel, food and other trip expenses would be charged. The remainder would be divided equally among the members of the crew.

The share schedule to be applied to each type of boat is agreed between the Vessel Owners' Association, fishing companies and the fishermen's unions. The share schedule is variable according to species fished, e.g., halibut, salmon, herring. A share schedule for herring applies only to members of the Co-operative - the other fishermen operate in the herring fishery on a contract rate per ton.

The number of fishing licences issued is not a satisfactory measure of the number of commercial fishermen because many licence holders may fish only a short time. However, 526 halibut fishing licences were issued in British Columbia in 1957 to fishermen holding only the one licence, and 924 to fishermen holding one or more licences for other fisheries. The figures for 1953, 1955 and 1957 are summarized in Table 2, following.

D. Primary Marketing

Halibut are gutted and iced on fishing vessels and at the dock. The heads are removed before weighing.

The larger boats carry ice and can stay out for two weeks, if necessary, to complete their catch. The small two-man boats carry no ice and these deliver their catch to camps near the grounds, whence the fish are transported by packer boats to the buyer's wharf.

The grades established by custom and applying to gutted head-off fish follow:

<u>Grade</u>	<u>Description</u>	<u>Proportion of Catch</u>
Chicken (Chix)	6 - 10 lb.	8 - 10%
Medium	10 - 60 lb.	60 - 62%
Large	Over 60 lb.	24 - 28%
No. 2 *	Greys or Culls	2 - 3%

¹ Fisheries Statistics of British Columbia, 1957, Department of Fisheries in Vancouver, Tables 5 and 7.

TABLE 2. NUMBERS OF FISHERMEN LICENSED IN BRITISH COLUMBIA,
1953, 1955 AND 1957^a

	<u>1953</u>	<u>1955</u>	<u>1957</u>
<u>Grand Total of Licensees</u>	12,008	11,860	12,016
<u>One Licence Only</u>			
Total	9,844	8,643	8,819
Halibut	117	539	526
Troll Salmon	3,446	2,861	3,153
<u>Two Licences</u>			
Total	1,904	2,552	2,556
Gillnet Salmon and Halibut	209	383	417
Troll Salmon and Halibut	74	136	88
Captain - Salmon and Halibut	28	77	64
Assistant - Salmon and Halibut	28	267	211
<u>Three or More Licences</u>			
Total	260	665	641
(Assistant - Salmon,			
(Assistant - Herring and Halibut	2	188	144

^a Data from Fisheries Statistics of British Columbia, 1957, Table 8.

The greater part of the halibut not handled by the Co-operative is sold at auction in the chief markets - Prince Rupert and Vancouver. "Hailing fares" reported by skippers by ship-to-shore telephone on the way into port are offered and sold at auction on the exchange before the trip arrives, so that the skipper receives notice in advance of where he is to dock to unload the fish. A seat on the exchange is necessary to take part in the bidding and eight or 10 buyers (fishing companies) are represented.

United States ports provide an alternative market. Upon occasion, for instance, skippers on the way to port have refused to accept the highest bid offered on the Vancouver exchange and have landed at Seattle for prices as much as seven or eight cents a pound higher.

The Co-operative Association advances to its members 60% to 70% of the market value on delivery. The final settlement comes on December 1 each year, on the basis of sales and sales prospects. The Co-operative provides other services to its members, such as ice and bait at cost; the saving on ice has been as much as \$2.50 a ton.

Halibut bought at the camps may bring the fishermen a cent or two less than the current exchange price, because of the cost of packing it in to Prince Rupert or Vancouver. Since camp halibut is usually

¹ Canadian halibut vessels landing in Seattle in 1958 were reported to have averaged 24.6¢ a pound. Pacific Fisherman, Yearbook, 1958, p. 203.

bought in the gutted head-on state, the price would also reflect the loss in weight that would be incurred in beheading it at the processor's wharf. The weight loss in removing the head is about $12\frac{1}{2}\%$, and the removal of slime and of ice from the poke represents a further $1\frac{1}{2}\%$ - i.e., the recovery rate is about 86%. The grade sizes for halibut sold "head-on" allow for the weight of the head, the size limits at each end of the medium grade being $11\frac{1}{2}$ pounds and 68 pounds respectively instead of the 10-pound and 60-pound limits used for headless dressed halibut as weighed in at the plants.

The average value for each year of all Canadian halibut landings in British Columbia is shown in Table 1 above. The average value for 1958 was 20.7¢ a pound. These figures do not indicate the range of variation in prices during the season nor the variation between grades. The difference between the price of Medium halibut and the price of Chix appears to run around 5¢ to 7¢ a pound. The 1958 range of prices for Medium at Prince Rupert was from 17.2¢ to 23.3¢; for Chix 12¢ to 16¢; the median prices were, therefore, about 20¢ and 14¢ respectively. The price of Large halibut was usually close to that of Medium - sometimes even lower - and the few quotations for No. 2s were about the same as those for Chix.

E. Processing

There are about 25 handlers, some being subsidiaries of larger companies. Halibut comprises 50% or more of the business of one-third of these. Two or three subsidiaries of United States companies operate in Prince Rupert only in the halibut season. Most halibut processors deal in other fish products as well, such as fresh and frozen salmon, cod, and sole; several companies operate salmon canneries.

There has been little change since 1949 in the number of plants processing halibut. There is evidence that, for some, growth or diversification has decreased the importance of halibut in their total output. Halibut requires little processing, for the most part, except freezing, and this has not changed, although there has been some increase in the amount of steaking, filleting and packaging done by the fishing companies.

The introduction of chilled sea-water tanks as a better means of holding fish may help to spread peak processing loads over a longer period. This may be also an effect of the halibut lay-up scheme - although processors claim that, by reducing the supply of fish, it sometimes forces them to operate at low volume and high costs. The yearly catch does not vary widely and apparently there is sufficient freezing and storage capacity in existence to handle it over the six months of the fishing season.¹

¹ There is talk about the need for increased cold storage capacity at Prince Rupert.

Freezing costs for dressed halibut are estimated to be about 2¢ a pound. For the small amounts filleted, production costs of 8¢ per fillet-pound might be a generous estimate; one plant placed the direct labour cost per pound at 6¢. Because there is not much processing involved, plant wage rate increases and productivity changes over the 1949-1958 period probably had minor effects on the margin required by halibut processors for profitable operation.

Computation of the processors' costs must take account of the conversion rates from the landed weight to the weight of the various products. These are generally agreed to be 98% for frozen dressed halibut and 59%-60% for frozen fillets or flitches. Estimates of the recovery rate for steaks vary from 62%-64% up to 78%.

Storage costs are important for halibut, because of the considerable part of the production that is held up to a year before final sale. Public cold storage costs would be in the vicinity of three-quarters of a cent for the first month and one-fifth to one-quarter of a cent per month thereafter. Some of the fishing companies store in their own warehouses at 20°F. below zero.

Most of the halibut is shipped by the fishing companies in the headless dressed form; some outlets want large halibut, others small. Filleting operations usually use small halibut and some culls or No. 2s, although larger fish may be used if the demand for fillets is strong at any particular time. Flitches are produced, four to a fish, from medium and large halibut in the 40- to 80-pound size range. The processors' output of packaged items, such as frozen steaks and fish-and-chip dinners is growing, but is still a small part of the total volume.¹

Dressed halibut as a product is sold mainly on the basis of size. There is some brand differentiation of packaged items.

F. Distribution - Processor to Retail

Some of the larger fishing companies sell through exclusive brokers; the smaller ones are unable to provide the volume, variety or regularity of supply required by an exclusive agent. Brokerage rates are usually in the range of 2½% to 5%, varying presumably according to the services provided by the agent and the competitive situation, type of product, etc. British Columbia Packers have their own sales offices in the chief Canadian and United States market centres (e.g., Toronto, Montreal, Halifax, Calgary, Edmonton, Saskatoon, Winnipeg, Chicago, New York, Los Angeles, and San Francisco), and sell through brokers in other areas. The Canadian Fishing Company sell in the United States through their parent company, the New England Fishing Company. The sales agency for the Prince Rupert Fishermen's Co-operative Association in Canada is the Fishermen's Co-operative Federation of Prince Rupert.

1 See earlier discussion re proportional utilization of landings.

In the United States, Fishermen's Federation Incorporated sells for its parents, the Fishermen's Co-operative Federation of Prince Rupert and the Halibut Producers' Co-operative of Seattle.

Sales are made to wholesale or chain stores f.o.b. British Columbia. Sales managers express a dislike for shipping on consignment, saying that it leaves their goods "out of position"; instead of consignment sales, an agent may be authorized to withdraw a specified amount from cold storage in his area. The bulk of sales are carload lots shipped on order. Some shipments (of fresh fish, for instance) are trucked to United States Pacific Coast centres.

A considerable saving is possible in shipping via the new large 60,000-pound "reefer" cars. This is apparent in the following schedule of refrigerated carload freight rates from Vancouver:

Rate in dollars per hundred pounds to:

<u>Size of Car</u>	<u>Chicago</u>	<u>Detroit</u>	<u>New York; Boston</u>
30,000 lb.	-	4.13	4.66
36,000 lb.	2.44	3.25	3.80
60,000 lb.	1.65	1.85	2.25

The tare is about 20% for fish packed in boxes, 10% if in fibreboard cartons.

Carload express rates on halibut shipped from Vancouver to New York, Boston or Montreal are as follows:

<u>Carload Minimum (lb.)</u>	<u>Rate/100 lb. (\$)</u>
20,000	6.97
22,000	6.36
24,000	5.89
30,000	5.60

As stated in an earlier part, the domestic disappearance of halibut is computed at about 35% of landings or 8.5 million pounds a year over the past nine years. More precise figures than this "residual" estimate cannot be obtained because halibut fillets and flitches are not segregated in the export statistics; flitches are, in fact, included with dressed halibut when they should more properly be included with fillets. Also data on prices received by the fishing companies for dressed halibut are not available as a series. Consequently, comparison with wholesale price series to determine the processors' and wholesalers' markups cannot be carried out.

The official (Dominion Bureau of Statistics) mid-month

wholesale price averages for frozen halibut in Vancouver and Toronto are listed in Appendix Table A4. The current transportation cost from Vancouver to Toronto is, by carload freight, about 3¢ a pound and by express, about 6¢. Consequently, the Toronto wholesale price should reflect this cost in comparison with the Vancouver price. The difference between the two quotations was 10¢ or 12¢ during 1958 and, in fact, over the past eight years; it was 7¢ to 9¢ in 1950.

The United States official average wholesale price of fresh or frozen halibut is also listed in Table A4. This is not closely comparable with either the Vancouver or Toronto wholesale price series, being an average for the United States for fresh as well as frozen halibut.

The Toronto price series and the United States average wholesale price are contained in Appendix Table A4. A gradual decline in the wholesale prices from 1951 to 1955 is apparent, followed by increasing prices through 1956, and a comparatively stable price, coupled with a somewhat wider wholesale-retail price spread, from the middle of 1957. This wider spread was chiefly the result of a 4¢ drop in the wholesale price during the first part of 1957. The retail price of fresh halibut steaks showed a more or less continuous up-trend, but this series is suspect, particularly because the monthly quotations are continuous, and not far above the price of frozen steaks, until late 1954. Fresh Pacific halibut would not be available in Toronto over 12 months of the year; fresh Atlantic halibut could have been included in the sampling by mistake, since Halifax halibut does not wear the Nova Scotia tartan in the retail store, but a more likely explanation is that frozen dressed Pacific halibut became fresh halibut steaks at the retail level - a type of metamorphosis not unfamiliar to the fish marketing trade in the past.

G. Retail Distribution

Halibut is generally the fish used in fish-and-chip stores and it is also a common item on restaurant menus. These uses may have made their influence felt on processors as a rising demand for fillets and flitches and portion packs. Retailers may do some filleting, but the frozen consumer packs are turned out mainly by the fishing companies. Much of the steaking is done in retail establishments; consequently, much of the costs involved would come out of the retail margin.

There is conflicting evidence concerning the recovery rate in steaking; one industry source placed the rate at 62% to 64%; other figures are as high as 78%. The rate to be used in computing the wholesale-to-retail margin and the fishermen's share of the retail dollar spent for halibut steaks has been set arbitrarily at 75%.

On the basis of Toronto prices, retailers gradually increased their markup on frozen halibut steaks from 15% to 20% of selling price

in the early '50's to 30% to 36% in 1955 (when the retail price was lowest). During late 1956 and early 1957, the markup was below 25%, but it hovered in the vicinity of 30% thereafter. The absolute margin was much less changeable, the percentage markup figures being affected by correlated movements up or down of both wholesale and retail prices.

Consumption is computed as a residual figure: production minus changes in stocks minus exports. Incomplete data on stocks and exports relating to fillets prevent a close estimate of yearly consumption. Over the nine years 1950-58, average domestic disappearance was of the order of $8\frac{1}{2}$ million pounds in terms of landed weight. (See Section B.) Using the June, 1954, population figure for Canada of 15.2 million persons (1954 was the median year), consumption of halibut was less than three-fifths of a pound (0.56 lb.) per person a year. In terms of edible weight (say, 60% of landed weight), the average is much smaller - about a third of a pound per person.

Although little is known about consumer behaviour regarding fish in general, or halibut in particular, it is hard to believe that the current methods of marketing halibut are unrelated to the demand for the product. Halibut that has been in frozen storage for months - particularly if the temperature has not been maintained well below zero Fahrenheit - tends to become dessicated and discoloured. Even so, the halibut evidently retains enough of its original high quality to sell at prices above those obtainable for other groundfish species.

It may be that a considerable part of the halibut marketed goes to the restaurant trade. Surveys of wholesale and retail fish marketing in central Canadian cities made by the Department of Fisheries some 10 years ago indicated that as much as 40% of wholesale fish sales may be made to hotels, restaurants and institutions. It is likely that halibut, because of its use in restaurant menus and in fish-and-chip dinners, would represent a high proportion of fish sales to such outlets. It is likely, too, that frozen halibut going into restaurants is not subject to defrosting before delivery and may, therefore, reach the consumer's plate in better condition than much that is sold through retail stores.

H. Measurement of the Price Spread

Five-pound cellophane wrapped packs of halibut fillets sold for 58¢ to 60¢ at wholesale in Toronto in 1958, according to White Fish Company's price lists. For the first half of 1958, at least, this would have been halibut caught in 1957, at an average landed cost of 16.3¢ a pound. With a recovery rate of 59% in filleting, the landed price would represent a raw material cost of $27\frac{1}{2}$ ¢ per fillet-pound. However, assuming that Chicken or No. 2 halibut were filleted, at a landed cost of about 12¢, the raw material cost of fillets would be about 20¢ a pound. Assuming processing costs of 9¢ or 10¢ a pound and transportation costs Vancouver to Toronto of 6¢, there would remain 23¢ to 25¢, or 40% on the wholesale price, for division between processor and wholesaler.

The major part of the halibut sold at retail would be in the form of steaks, and here there is uncertainty as to the validity of a 75% recovery rate. Be that as it may, the fishermen's price and the wholesale-retail margin have been computed as shares of the retail dollar and the results appear in Appendix Table A5. The average landed price for the year is used from May to the following April in comparison with monthly retail values (the latter obtained by multiplying the Toronto retail price for steaks by 75/100 to determine the retail value equivalent per pound of halibut as landed by the fishermen).

The Toronto price would include a transportation cost of 3¢ a pound (6¢ for express) on dressed halibut - which would become 4¢ (to 8¢) per pound of steaks. There would be also a progressively increasing storage cost attached to sales from the beginning of the production year. Presumably the transportation costs and some part of the storage costs are added at wholesale and retail levels.

From Table A5, the fishermen's share of the retail dollar spent for halibut steaks has varied usually between 30% and 40%, and was about 38% during the last half of 1958. Retailers' margins were around the 30% level in 1958, up to 36.7% in 1955, and as low as 15% in the early '50's.

APPENDIX TABLE A1. CANADIAN EXPORTS OF FRESH AND FROZEN
DRESSED PACIFIC HALIBUT, 1950 TO 1958

Calendar Year	Quantity (thousand lb.)			Value (\$ thousand)		
	Fresh Dressed Halibut	Frozen Dressed Halibut	Total Fresh and Frozen Dressed	Fresh Dressed Halibut	Frozen Dressed Halibut	Total Fresh and Frozen Dressed
1950	2,193	7,666	9,859	605	2,295	2,900
1951	2,354	8,022	10,376	516	2,346	2,862
1952	2,925	9,990	12,915	623	2,797	3,420
1953	2,587	9,484	12,071	511	2,572	3,083
1954	4,268	11,291	15,559	804	3,088	3,892
1955	3,466	10,961	14,427	541	2,416	2,957
1956	3,551	8,876	12,427	858	2,576	3,434
1957	3,549	10,378	13,927	692	2,908	3,600
1958	5,264	11,203	16,467	1,173	3,309	4,482
Average, 1950-58	3,351	9,763	13,114	702	2,701	3,403

Source: Trade of Canada, D.B.S., Department of Trade and Commerce,
Ottawa.

APPENDIX TABLE A2. COLD STORAGE HOLDINGS OF PACIFIC HALIBUT
IN CANADA, YEAR-END, 1949 TO 1958

(Thousands of Pounds)

<u>Year Ending Dec. 31</u>	<u>Dressed</u>	<u>Fillets</u>	<u>Steaks</u>
1949	5,155 ^a	-	-
1950	5,783 ^a	-	-
1951	6,988 ^a	-	-
1952	6,582	940	19
1953	8,556	1,267	24
1954	9,067	1,047	32
1955	5,704	756	38
1956	9,815	1,000	53
1957	6,574	1,587	50
1958 ^b	7,254	1,200	54

a Combined stocks of dressed halibut, fillets and steaks.

b Preliminary figures.

Source: Cold Storage Holdings of Fish, D.B.S., Department of Trade and Commerce, Ottawa (monthly).

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958

(Cents Per Pound)						
United States Average Wholesale Price of Fresh and Frozen Halibut <u>(1)</u>	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello <u>(2)</u>	Mid-Month Wholesale Price		1st of Month Retail Price of Halibut Steaks		Fresh Toronto (7)
		Frozen Halibut 10-60 lb.		Frozen		
		Vancouver (3)	Toronto (4)	Vancouver (5)	Toronto (6)	
1950						
Jan.		26.1	33.9	40.0	52.7	58.6
Feb.		26.9	34.2	40.0	54.0	60.0
March		26.3	34.9	40.0	54.2	61.3
April		26.3	34.8	39.0	54.4	61.3
May		28.0	34.8	39.7	53.6	61.3
June		32.0	38.9	-	57.6	62.0
July		33.5	40.6	-	60.1	62.6
Aug.		34.0	40.6	45.6	61.2	62.6
Sept.		34.0	44.6	45.6	64.3	65.4
Oct.		35.3	44.6	46.6	67.6	69.1
Nov.		35.3	44.4	46.6	68.3	71.1
Dec.		35.3	44.4	46.6	68.3	72.8

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

(Cents Per Pound)						
United States Average Wholesale Price of Fresh and Frozen Halibut (1)	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello (2)	Mid-Month Wholesale Price Frozen Halibut 10-60 lb. (3)		1st of Month Retail Price of Halibut Steaks Frozen (5)		Fresh Toronto (7)
		Vancouver (3)	Toronto (4)	Vancouver (5)	Toronto (6)	
1951						
Jan.			35.0	44.6	47.6	68.3
Feb.			39.1	44.6	47.6	68.8
March			35.0	44.4	47.6	68.5
April			32.5	43.9	48.0	68.8
May			-	43.0	46.1	68.8
June			26.5	42.6	-	68.8
July			27.2	41.0	-	-
Aug.			27.2	41.0	-	68.8
Sept.			27.5	41.1	-	69.0
Oct.			28.2	40.8	47.6	68.7
Nov.			28.2	40.9	47.0	68.2
Dec.			28.2	40.9	47.8	68.2

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

(Cents Per Pound)						
United States Average Wholesale Price of Fresh and Frozen Halibut (1)	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello (2)	Mid-Month Wholesale Price Frozen Halibut 10-60 lb. (3)		1st of Month Retail Price of Halibut Steaks Frozen (5)		Fresh Toronto (7)
		Vancouver	Toronto (4)	Vancouver	Toronto (6)	
1952						
Jan.	59	28.2	40.9	47.8	69.2	72.8
Feb.	59	28.5	40.9	47.8	69.2	72.8
March	59	28.5	40.0	47.8	69.5	73.7
April	59	28.5	39.2	47.8	69.6	73.7
May	59	28.5	38.6	47.8	69.0	73.7
June	59	-	38.6	-	69.0	72.2
July	59	27.2	38.3	-	68.8	72.2
Aug.	59	26.9	38.3	-	69.0	72.2
Sept.	53	26.6	38.3	47.8	69.0	72.2
Oct.	42	26.6	38.1	47.8	68.4	73.0
Nov.	44	26.6	38.1	47.8	68.4	73.0
Dec.	34	26.6	38.1	47.8	67.6	73.0

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

	(Cents Per Pound)						
	United States Average Wholesale Price of Fresh and Frozen Halibut (1)	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello (2)	Mid-Month Wholesale Price Frozen Halibut 10-60 lb. (3)	Frozen Vancouver (4)	1st of Month Retail Price of Halibut Steaks Frozen Vancouver (5)	Frozen Toronto (6)	Fresh Toronto (7)
1953							
Jan.	33	59	26.6	38.1	47.8	67.1	73.0
Feb.	32	59	26.6	36.2	47.8	67.7	73.0
March	33	-	26.6	36.2	47.8	67.7	73.7
April	31	-	26.6	35.9	47.8	67.7	73.7
May	29	46	25.0	35.3	47.8	68.0	73.6
June	31	-	22.2	34.6	47.8	66.6	72.3
July	33	46	23.2	34.2	44.3	67.3	73.9
Aug.	31	46	23.4	34.2	44.3	64.8	76.4
Sept.	30	-	23.4	34.8	44.3	64.5	75.5
Oct.	30	57	23.6	35.0	43.2	64.5	75.5
Nov.	30	57	24.4	34.7	43.8	64.2	75.9
Dec.	30	-	24.4	34.7	44.2	64.2	74.9

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

		(Cents Per Pound)			
1954		United States Average Wholesale Price of Frozen Halibut (1)	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello (2)	Mid-Month Wholesale Price Frozen Halibut 10-60 lb. (3)	
				Vancouver (3)	Toronto (4)
				1st of Month Retail Price of Halibut Steaks	
				Frozen Vancouver (5)	Fresh Toronto (6)
				Frozen Vancouver (5)	Fresh Toronto (7)
Jan.	31	55	24.3	44.2	76.4
Feb.	31	55	24.3	45.0	77.5
March	31	55	24.3	45.0	76.0
April	31	55	24.4	45.0	76.3
May	32	55	24.4	45.0	76.3
June	33	55	25.0	40.0	76.0
July	34	55	25.0	45.0	75.6
Aug.	32	55	25.0	—	74.4
Sept.	45	55	25.2	45.0	74.4
Oct.	32	55	25.2	—	73.0
Nov.	30	57	25.2	46.0	—
Dec.	28	57	25.2	46.0	77.5

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

	(Cents Per Pound)						
	United States Average Wholesale Price of Fresh and Frozen Halibut (1)	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello (2)	Mid-Month Wholesale Price Frozen Halibut 10-60 lb. Vancouver (3)	Toronto (4)	Frozen Vancouver (5)	Toronto (6)	Fresh Toronto (7)
1955							
Jan.	28	57	24.5	33.8	45.0	64.4	-
Feb.	26	57	22.2	32.0	45.0	63.2	-
March	24	57	22.1	31.8	44.0	63.0	-
April	22	57	22.1	30.4	44.0	62.2	80.0
May	22	57	22.1	30.4	44.0	61.6	80.0
June	24	57	20.2	29.6	44.0	61.8	77.5
July	29	55	21.9	29.2	44.0	60.2	76.2
Aug.	34	55	21.9	29.4	-	60.2	-
Sept.	43	55	22.2	31.0	-	60.5	-
Oct.	32	55	22.2	34.0	-	61.0	-
Nov.	27	-	23.4	34.5	-	61.8	-
Dec.	28	-	23.4	34.8	-	63.3	-

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

		(Cents Per Pound)						
1956		United States Average Wholesale Price of Fresh and Frozen Halibut (1)	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello (2)	Mid-Month Wholesale Price Frozen Halibut 10-60 lb. Vancouver Toronto (3) (4)		1st of Month Retail Price of Halibut Steaks Frozen Vancouver Toronto (5) (6)		Fresh Toronto (7)
Jan.	29	-	59	25.2	36.0	-	63.3	-
Feb.	32	-	59	25.5	37.6	-	65.3	-
March	32	-	59	26.8	37.7	-	66.6	80.0
April	34	59	59	26.8	37.7	-	66.7	80.0
May	40	59	59	27.2	38.5	-	66.7	-
June	34	59	59	30.5	38.5	-	68.0	80.0
July	40	59	59	32.0	40.6	-	67.3	80.0
Aug.	44	59	59	33.0	40.6	-	68.1	81.2
Sept.	45	-	-	33.5	41.9	-	69.5	88.0
Oct.	43	-	-	33.5	41.9	-	70.0	88.8
Nov.	37	70	70	33.5	41.9	-	71.4	-
Dec.	35	70	70	33.5	42.4	-	71.4	-

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

	(Cents Per Pound)					
	United States Average Wholesale Price of Fresh and Frozen Halibut	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello	Mid-Month Wholesale Price Frozen Halibut 10-60 lb.	Frozen Vancouver	Frozen Toronto	1st of Month Retail Price of Halibut Steaks
	(1)	(2)	(3)	(4)	(5)	(6)
						Fresh Toronto (7)
1957						
Jan.	35	70	33.5	42.4	60.0	71.4
Feb.	34	70	33.0	42.4	60.0	71.0
March	31	70	31.8	41.2	58.7	71.8
April	30	60	29.2	40.0	58.7	71.3
May	29	-	25.3	39.2	52.3	70.1
June	33	60	-	38.1	-	69.6
July	37	60	-	38.8	-	70.4
Aug.	32	60	24.5	38.1	-	69.1
Sept.	44	-	25.1	38.4	-	71.0
Oct.	35	59	24.8	38.4	-	70.2
Nov.	31	59	24.8	38.2	-	71.0
Dec.	31	59	24.8	38.2	-	70.9

APPENDIX TABLE A4. SELECTED MONTHLY WHOLESALE AND RETAIL PRICE SERIES
FOR PACIFIC HALIBUT, 1950 TO 1958 (Cont'd.)

(Cents Per Pound)						
United States Average Wholesale Price of Fresh and Frozen Halibut (1)	White's Fish Co., Toronto Wholesale Frozen 5-lb. Cello (2)	Mid-Month Wholesale Price		1st of Month Retail Price of Halibut Steaks		Fresh Toronto (7)
		Frozen Halibut		Frozen		
		Vancouver (3)	Toronto (4)	Vancouver (5)	Toronto (6)	
1958						
Jan.	31	25.2	38.2	60.0	71.4	-
Feb.	32	25.8	38.5	-	72.0	-
March	32	25.8	38.5	52.0	72.6	-
April	34	25.8	38.8	51.8	72.2	-
May	35	-	38.8	53.4	70.4	-
June	40	-	38.8	-	71.5	-
July	40	-	38.0	-	71.2	-
Aug.	37	27.7	38.0	-	72.2	-
Sept.	37	28.3	38.8	-	71.8	-
Oct.	34	28.3	38.8	-	72.5	-
Nov.	34	28.3	38.8	-	72.3	-
Dec.	34	28.8	38.8	-	72.0	-

Sources: Vancouver and Toronto wholesale and retail price series as published in the Monthly Review of Canadian Fisheries Statistics, D.P.S., Ottawa. The United States average wholesale price published monthly in the Daily Fishery Report, Market News Services, Bureau of Commercial Fisheries, United States Department of the Interior. White's Fish Company prices by courtesy of the Economics Branch, Department of Fisheries of Canada, Ottawa.

APPENDIX TABLE A5.
EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN.

	Dressed Halibut Wholesale Price x 98/100 (1)	Halibut Steaks Retail Price x 75/100 (2)	Wholesale Retail Margin (2)-(1) ^a (3)	Retail Margin as a % of Retail Value (3) x 100 (2) (%) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (2) (%) (6)
1950						
Jan.	33.2	39.5	"	"	15.5	39.2
Feb.	33.5	40.5	7.3	18.0	15.5	38.3
March	34.2	40.7	7.2	17.7	15.5	38.1
April	34.1	40.8	6.6	16.2	15.5	38.0
May	34.1	40.2	6.1	15.2	20.3	50.5
June	38.1	43.2	9.1	21.1	20.3	47.0
July	39.8	45.1	7.0	15.5	20.3	45.0
Aug.	39.8	45.9	6.1	13.3	20.3	44.2
Sept.	43.7	48.2	8.4	17.4	20.3	42.1
Oct.	43.7	50.7	7.0	13.8	20.3	40.0
Nov.	43.5	51.2	7.5	14.6	20.3	39.6
Dec.	43.5	51.2	7.7	15.0	20.3	39.6

1950

APPENDIX TABLE A5.
EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 <u>(1)</u>	Halibut Steaks Retail Price x 75/100 <u>(2)</u>	Wholesale- Retail Margin (2)-(1) ^a <u>(3)</u>	Retail Margin as a % of Retail Value (3) x 100 (2) <u>(4)</u>	Yearly Average Landed Value of Halibut (¢/lb.) <u>(5)</u>	Fishermen's Share of the Retail Dollar (5) x 100 (2) <u>(6)</u>
<u>1951</u>						
Jan.	43.7	51.2	7.7	15.0	20.3	39.6
Feb.	43.7	51.6	7.9	15.3	20.3	39.3
March	43.5	51.4	7.7	15.0	20.3	39.5
April	43.0	51.6	8.1	15.7	20.3	39.3
May	42.1	51.6	8.6	16.7	17.0	32.9
June	41.7	51.6	9.5	18.4	17.0	32.9
July	40.2	-	-	-	17.0	-
Aug.	40.2	51.6	11.4	22.1	17.0	32.9
Sept.	40.3	51.8	11.6	22.4	17.0	32.8
Oct.	40.0	51.5	11.2	21.7	17.0	33.0
Nov.	40.1	51.2	11.2	21.9	17.0	33.2
Dec.	40.1	51.2	11.1	21.6	17.0	33.2

APPENDIX TABLE A5.
EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 (1)	Halibut Steaks Retail Price x 75/100 (2)	Wholesale- Retail Margin (2)-(1) ^a (3)	Retail Margin as a % of Retail Value (3) x 100 (2) (%) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (2) (%) (6)
1952						
Jan.	40.1	51.9	11.8	22.7	17.0	32.8
Feb.	40.1	51.9	11.8	22.7	17.0	32.8
March	39.2	52.1	12.0	23.0	17.0	32.6
April	38.4	52.2	13.0	24.9	17.0	32.6
May	37.8	51.8	13.4	25.9	16.8	32.4
June	37.8	51.8	14.0	27.0	16.8	32.4
July	37.5	51.6	13.8	26.7	16.8	32.6
Aug.	37.5	51.8	14.3	22.1	16.8	32.4
Sept.	37.5	51.8	14.3	27.6	16.8	32.4
Oct.	37.3	51.3	13.8	26.9	16.8	32.7
Nov.	37.3	51.3	14.0	27.3	16.8	32.7
Dec.	37.3	50.7	13.4	26.4	16.8	33.1

APPENDIX TABLE A5.
EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 (1)	Halibut Steaks Retail Price x 75/100 (2)	Wholesale- Retail Margin (2)-(1) ^a (3)	Retail Margin as a % of Retail Value (3) x 100 (2) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (2) (6)
1952						
Jan.	37.3	50.3	13.0	25.8	16.8	33.4
Feb.	35.5	50.8	13.5	26.6	16.8	33.1
March	35.5	50.8	15.3	30.1	16.8	33.1
April	35.2	50.8	15.3	30.1	16.8	33.1
May	34.6	51.0	15.8	31.0	14.7	28.8
June	33.9	50.0	15.4	30.8	14.7	29.4
July	33.5	50.5	16.6	32.9	14.7	29.1
Aug.	33.5	48.6	15.1	31.1	14.7	30.2
Sept.	34.1	48.4	14.9	30.8	14.7	30.4
Oct.	34.3	48.4	14.3	29.5	14.7	30.4
Nov.	34.0	48.2	13.9	28.8	14.7	30.5
Dec.	34.0	48.2	14.2	29.5	14.7	30.5

APPENDIX TABLE A5.
EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 (1)	Halibut Steaks Retail Price x 75/100 (2)	Wholesale- Retail Margin (2)-(1) ^a (3)	Retail Margin as a % of Retail Value (3) x 100 (2) (%) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (2) (%) (6)
1954						
Jan.	34.0	48.5	14.5	29.9	14.7	30.3
Feb.	33.9	48.5	14.5	29.9	14.7	30.3
March	34.3	48.4	14.5	30.0	14.7	30.4
April	33.6	48.4	14.1	29.1	14.7	30.4
May	33.7	48.4	14.8	30.6	15.8	32.6
June	33.7	48.6	14.9	30.7	15.8	32.5
July	33.7	49.0	15.3	31.2	15.8	32.2
Aug.	33.7	48.1	14.4	29.9	15.8	32.8
Sept.	33.4	48.2	14.5	30.1	15.8	32.8
Oct.	33.4	48.5	15.1	31.1	15.8	32.6
Nov.	33.3	48.4	15.0	31.0	15.8	32.6
Dec.	33.4	48.3	15.0	31.1	15.8	32.7

APPENDIX TABLE A5. EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 (¢) (1)	Halibut Steaks Retail Price x 75/100 (¢) (2)	Wholesale- Retail Margin (2)-(1) a (¢) (3)	Retail Margin as a % of Retail Value (3) x 100 (%) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (%) (6)
1955						
Jan.	33.1	48.3	14.9	30.8	15.8	32.7
Feb.	31.4	47.4	14.3	30.2	15.8	33.3
March	31.2	47.3	15.9	33.6	15.8	33.4
April	29.8	46.7	15.5	33.2	15.8	33.8
May	29.8	46.2	16.4	35.5	13.0	28.1
June	29.0	46.4	16.6	35.8	13.0	28.0
July	28.6	45.2	16.2	35.8	13.0	28.8
Aug.	28.8	45.2	16.6	36.7	13.0	28.8
Sept.	30.4	45.4	16.6	36.6	13.0	28.6
Oct.	33.3	45.8	15.4	33.6	13.0	28.4
Nov.	33.8	46.4	13.1	28.2	13.0	28.0
Dec.	34.1	47.5	13.7	28.8	13.0	27.4

APPENDIX TABLE A5.

EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 (1)	Halibut Steak Retail Price x 75/100 (2)	Wholesale- Retail Margin (2)-(1) ^a (3)	Retail Margin as a % of Retail Value (3) x 100 (2) (%) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (2) (%) (6)
1956						
Jan.	35.3	47.5	13.4	28.2	13.0	27.4
Feb.	36.8	49.0	13.7	28.0	13.0	26.5
March	36.9	50.0	13.2	26.4	13.0	26.0
April	36.9	50.0	13.1	26.2	13.0	26.0
May	37.7	50.0	13.1	26.2	21.7	43.4
June	37.7	51.0	13.3	26.1	21.7	42.5
July	39.8	50.5	12.8	25.3	21.7	43.0
Aug.	39.8	51.1	11.3	22.1	21.7	42.5
Sept.	41.1	52.1	12.3	23.6	21.7	41.7
Oct.	41.1	52.5	11.4	21.7	21.7	41.3
Nov.	41.1	53.6	12.5	23.3	21.7	40.5
Dec.	41.6	53.6	12.5	23.3	21.7	40.5

APPENDIX TABLE A5. EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 (1)	Halibut Steaks Retail Price x 75/100 (2)	Wholesale-Retail Margin (2)-(1) ^a (3)	Retail Margin as a % of Retail Value (3) x 100 (2) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (2) (6)
1957						
Jan.	41.6	53.6	12.0	22.4	21.7	40.5
Feb.	41.6	53.3	11.7	22.0	21.7	40.7
March	40.4	53.9	12.3	22.8	21.7	40.3
April	39.2	53.5	13.1	24.5	21.7	40.6
May	38.4	52.6	13.4	25.5	16.3	31.0
June	37.3	52.2	13.8	26.4	16.3	31.2
July	38.0	52.8	15.5	29.4	16.3	30.9
Aug.	37.3	51.8	13.8	26.6	16.3	31.5
Sept.	37.6	53.3	16.0	30.0	16.3	30.6
Oct.	37.6	52.7	15.1	28.7	16.3	30.9
Nov.	37.4	53.3	15.7	29.5	16.3	30.6
Dec.	37.4	53.2	15.8	29.7	16.3	30.6

APPENDIX TABLE A5. EQUIVALENT VALUES AT TORONTO OF FROZEN DRESSED HALIBUT
AT WHOLESALE AND FROZEN HALIBUT STEAKS AT RETAIL, PER
POUND OF HALIBUT AS LANDED BY FISHERMEN (Cont'd.).

	Dressed Halibut Wholesale Price x 98/100 (1)	Halibut Steaks Retail Price x 75/100 (2)	Wholesale- Retail Margin (2)-(1) ^a (3)	Retail Margin as a % of Retail Value (3) x 100 (2) (%) (4)	Yearly Average Landed Value of Halibut (¢/lb.) (5)	Fishermen's Share of the Retail Dollar (5) x 100 (2) (%) (6)
1958						
Jan.	37.4	53.6	16.2	30.2	16.3	30.4
Feb.	37.7	54.0	16.6	30.7	16.3	30.2
March	37.7	54.5	16.8	30.8	16.3	29.9
April	38.0	54.2	16.5	30.4	16.3	30.1
May	38.0	52.8	14.8	28.0	20.7	39.2
June	38.0	53.6	15.6	29.1	20.7	38.6
July	37.2	53.4	15.4	28.8	20.7	38.8
Aug.	37.2	54.2	17.0	31.4	20.7	38.2
Sept.	38.0	53.9	16.7	31.0	20.7	38.4
Oct.	38.0	54.4	16.4	30.1	20.7	38.1
Nov.	38.0	54.2	16.2	29.9	20.7	38.8
Dec.	38.0	54.0	16.0	29.6	20.7	38.3

^a The retail price is lagged half-a-month, e.g., the mid-month January wholesale value is deducted from the 1st of February retail value, and so on.

LOBSTERS

1. The Raw Material

The crustacean Homarus americanus or American lobster is much like its fresh-water relative, the crayfish. The upper part of the body is protected by a hard shell or carapace. Attached to the underside of the body are many appendages, including four pairs of walking legs, a pair of large claws for capturing food, five pairs of mouth parts serving to hold the food, a pair of small feelers in which the sense of smell resides, the two long feelers concerned with touch, a pair of swimmerets projecting from each of the five tail segments, and the tail fan on the last segment. The colour varies from greenish-blue to reddish-brown, generally with greenish-black spots on the carapace. The lobster is red only after it has been boiled.

The lobster lives and scavenges for food on the bottom in depths from one to 20 fathoms. Small live fish may be captured, but the usual food consists of dead fish and such fixed or slow-moving animals as shellfish and worms. Feeding and growth are slower in cold water. Maturity is reached at about five years of age and a length of eight or nine inches in warm waters. The lobster grows by "moulting" or shedding its shell. After maturity, the female grows more slowly than the male, because females may moult one year and lay eggs the next, and cannot moult again until the eggs are hatched 11 or 12 months after they are laid.

The eggs when laid are covered with a sticky cement which hardens and holds them firmly attached to the female in a pocket formed by the curve of the tail. An eight-inch female carries about 5,000 eggs, while one of 16 inches carries about 60,000. The taking of such egg-bearing or "berried" lobsters has been illegal in Canada since 1873.

Lobsters must be kept alive up to the time when they are boiled, in the home or restaurant or processing plant, but they will live for long periods after removal from the water if the temperature is kept low. Fresh water is lethal to lobsters, hence they must be kept from direct contact with melting ice during shipment. Lobsters awaiting shipment are usually held in the seawater of the harbour in "floats"; the crates containing 110 to 120 pounds of lobsters are tied to a line to hold them together, floating barely submerged in the water. Sudden heavy rains may cover the harbour with a layer of fresh water, and this may kill many lobsters in the floats if the crates are not weighted down to sink them to the bottom.

A good deal of individual handling of the lobsters by the fishermen is necessary, and the claws have to be banded or plugged if the lobsters are to be shipped alive, to keep them from killing or maiming one another in the crate. Much hand labour is required in producing fresh or frozen or canned lobster meat, because of the work of removing the meat from the shell, claws and legs after the lobsters are

boiled. This work can be passed on to the consumer if the lobsters are sold alive or fresh-boiled, but the cost of shipment alive is increased by the care required to maintain the lobsters in a healthy state and by the loss on dead lobsters.

Lobster is a superior food in the economic sense, limited in supply and selling at prices of sometimes several dollars a pound in terms of edible weight. Weak, maimed or smaller-sized lobsters are bought usually at a lower price for processing into lobster meat - canned or chilled or frozen. The greater part of the fresh and frozen (and perhaps even of the canned) lobster is served in restaurant meals.

Quality in lobsters is a matter of care in processing and in transporting live lobsters to market, since weak lobsters sell at a lower price at the end of the journey. For instance, during the 1953 season, Newfoundland lobsters delivered in Gloucester, Massachusetts, brought prices as shown for three grade classifications:

<u>Grade</u>	<u>Price Range (Cents/Lb.)</u>
Select	45 - 52
Cull	35 - 42
Weak	25 - 32

On the mainland in that year, market size lobsters (those about a pound or more in weight) brought 40¢ to 45¢ a pound over much of the summer season, and canners (those of legal size, but less than a pound) about 10¢ less. Maimed lobsters would go to the cannery. Canadian regulations forbid the canning of weak or dead lobsters. Lobsters dead when they reach market are worse than a total loss; they are not only worthless, but transportation charges have been incurred on them.

2. Disposition of the Catch

The Canadian lobster catch reached a peak of nearly 52 million pounds in 1956, with a value to the fishermen of \$18 million. Over the 10 years 1949-58, the average annual landings figure was 45.4 million pounds, and the average value \$14.3 million. The annual catch data for the Atlantic Coast provinces are given in Table 1.

An approximate idea of the disposition of the lobster catch in the various provinces may be obtained from the annually published product figures.¹ The data for 1956 with accompanying percentage figures are given in Table 2.

A greater proportion of the lobster catch in the Gulf of St. Lawrence is canned or processed into fresh or frozen meat because the lobsters grow more slowly there, the legal size limits are lower and, consequently, more are of the smaller "canner" size, in comparison with

¹ From D.B.S., Fisheries Statistics of Canada, Table 3.

TABLE 1. ANNUAL CANADIAN LANDINGS AND LANDED VALUES
OF LOBSTERS, BY PROVINCES, 1949 TO 1958^a

Year	Canadian Atlantic Coast Total ^b	Newfoundland ^b	Prince Edward Island	Nova Scotia	New Brunswick	Quebec
A. <u>Quantity in Thousands of Pounds</u>						
1949	38,206	5,035	6,843	19,891	9,399	2,073
1950	44,686	5,051	9,098	21,978	11,332	2,278
1951	45,573	4,438	8,342	24,278	10,565	2,388
1952	44,133	3,709	8,375	23,065	10,379	2,314
1953	46,397	4,477	6,998	23,646	8,630	2,646
1954	46,675	5,242	7,358	23,248	8,023	2,804
1955	48,569	5,509	8,329	22,945	9,039	2,747
1956	51,960	4,824	9,701	22,250	11,532	3,653
1957	44,438	4,197	8,534	18,169	10,450	3,088
1958	43,106	4,696	7,970	17,825	9,956	2,659
B. <u>Value in Thousands of Dollars</u>						
1949	10,201	-	1,421	6,217	2,146	418
1950	12,137	-	1,963	7,031	2,640	503
1951	12,206	-	1,702	7,476	2,505	523
1952	13,232	-	1,849	8,016	2,822	545
1953	15,718	1,149	1,998	8,917	2,816	839
1954	15,558	1,331	1,977	8,902	2,590	758
1955	16,470	1,414	2,324	9,064	2,931	738
1956	18,023	1,292	2,726	9,268	3,718	1,019
1957	14,501	1,139	2,456	6,819	3,144	942
1958	15,287	1,273	2,511	7,301	3,371	832

TABLE 1. ANNUAL CANADIAN LANDINGS AND LANDED VALUES
OF LOBSTERS, BY PROVINCES, 1949 TO 1958^a (Cont'd.)

Year	Canadian Atlantic Coast ^b Total	Newfoundland ^b	Prince Edward Island	Nova Scotia	New Brunswick	Quebec
C. <u>Average Value in Cents per Pound</u>						
1949	26.7	-	20.8	31.3	22.8	20.1
1950	27.2	-	21.6	32.0	23.3	22.1
1951	26.8	-	20.4	30.8	23.7	21.9
1952	30.0	-	22.1	34.8	27.2	23.5
1953	33.9	25.7	28.5	37.7	32.6	31.7
1954	33.3	25.4	26.9	38.3	32.3	27.0
1955	33.9	25.7	27.9	39.3	32.4	26.9
1956	34.7	26.8	28.1	41.7	32.2	27.9
1957	32.6	27.1	28.8	37.5	30.1	30.5
1958	35.5	27.1	31.5	41.0	33.9	31.3

a Data from D.B.S., Fisheries Statistics of Canada, 1957. Preliminary figures for 1958 from D.B.S., Monthly Review of Canadian Fisheries Statistics (revised to the end of November, 1958). Figures may not add to totals because of rounding.

b Newfoundland landings not included in the totals for the four years 1949-52.

TABLE 2. LOBSTER PRODUCTS, 1956

Provinces	In Shell		Meat		Canned ^a	
	(thousand lb.)	(%)	(thousand lb.)	(%)	(cases)	(%)
Nova Scotia	18,520	60	512	19	10,069	17
Prince Edward Island	1,908	6	152	5	25,509	43
New Brunswick	8,983	29	1,901	69	17,664	29
Quebec	1,421	5	199	7	6,666	11
Totals	30,832	100	2,764	100	59,908	100

a Canned lobster is reported in standard cases of 36 pounds (96 six-ounce tins or the equivalent). In addition, there were reported for 1956, 2,251 18-pound cases of lobster tomalley (96 x 3 oz.) and 5,736 cases of lobster paste (presumably 36-lb. cases).

the catch in the warmer waters of western Nova Scotia and the Bay of Fundy. Furthermore, the bulk of the catch is obtained in the summer months when landed prices - i.e., the raw material costs in processing - are lowest of the year. Two of the three large Maritime frozen meat processors are located in northern New Brunswick.

For a number of reasons, however, the production and disposition statistics for lobsters may be subject to quite a wide margin of error. Because live lobsters may pass through many hands before being processed or marketed at home or abroad, it is difficult to eliminate double or triple counting from the statistics. Also, it may be that some fresh and frozen meat production is reported as canned, since the same types of tins are used for the three products. Furthermore, because of illegal fishing, a considerable quantity of undersized and out-of-season lobsters may be canned and enter the production and export statistics without having been recorded as landings.

Finally, it is impossible to reconcile production and export statistics with landings figures because of inaccuracies in any conversion factor used to determine the live weight equivalent of lobster meat and canned lobster. The recovery rate for meat from live lobsters varies quite widely according to the condition of the lobsters. For instance, a low yield would be obtained in the moulting period; the lobster fills out his new (soft) shell with water, which is later replaced by meat as the lobster grows to fill the shell. The yield of cooked meat from 100 pounds of live lobsters might vary within the range of 20 to 30 pounds; using a factor of 4.25 to 4.35 in converting meat to live weight represents a yield of about 23%. To obtain a five-ounce drained weight of canned lobster, 6-1/8 ounces of cooked meat (removed from the shell after the lobsters are boiled) are placed in the "six-ounce" can before it is sealed and retorted at 240°F. In processing frozen meat, 12 ounces of cooked meat packed in the tin yield 11-3/8 ounces net of frozen meat after freezing. At 6-1/8 ounces of meat per can, 588 ounces, or 36³/₄ pounds, would be required per standard

case of 96 six-ounce tins of canned lobster, and this might require from 110 to 185 pounds of live lobsters. An average figure of 156 to 160 pounds per case is consistent with the previously mentioned conversion factor of 4.25 to 4.35 pounds live weight per pound of meat.

The Canadian lobster export statistics are shown in Table 3. Practically all lobster exports went to the United States in the 10 years 1949 to 1958. The annual export of fresh or frozen lobster meat increased steadily to more than three million pounds at the end of the period, while the volume of canned lobster fell almost by one-half to about a million pounds yearly in the last six years.

TABLE 3. QUANTITY AND VALUE OF ANNUAL CANADIAN EXPORTS OF LOBSTERS AND LOBSTER PRODUCTS, 1949 TO 1958^a

Year	Lobsters Alive or Fresh- Boiled	Fresh or Frozen Lobster Meat	Canned Lobster	Lobsters Alive or Fresh- Boiled	Fresh or Frozen Lobster Meat	Canned Lobster
	A. <u>Quantity in Thousands of Pounds</u>			B. <u>Value in Thousands of Dollars</u>		
1949	20,109	1,199	1,649	8,594	1,522	2,353
1950	21,634	1,478	2,010	9,621	1,912	2,906
1951	22,394	1,816	1,475	9,437	2,362	2,214
1952	22,743	2,312	1,450	10,915	3,189	2,352
1953	20,571	2,356	977	9,955	3,814	1,967
1954	20,874	2,552	998	9,967	3,730	1,921
1955	22,112	3,459	948	11,207	5,506	1,843
1956	21,327	2,922	1,051	12,048	4,798	2,073
1957	21,417	3,170	1,012	11,226	5,188	2,063
1958	18,971	3,278	918	10,289	5,300	1,821

a Monthly Review of Canadian Fisheries Statistics or Trade of Canada, Dominion Bureau of Statistics, Department of Trade and Commerce, Ottawa.

The export trade data might be expected to indicate fairly well the proportions of the different lobster products going to market, because the domestic lobster market is comparatively small.¹ The proportions for five recent years of the principal products exported, in terms of their live weight equivalents, are indicated in Table 4.

1 It is assumed that exports are reported in terms of net weight. As an indication of the possible statistical error we have mentioned before, exports of fresh and frozen lobster meat, at about three million pounds a year since 1955, were in excess of the reported production for 1956 (in Table 2).

TABLE 4. PRODUCT DISTRIBUTION, LIVE WEIGHT EQUIVALENT, OF CANADIAN LOBSTER EXPORTS, 1954 TO 1958

Product	Average Annual Exports 1954-58 (thousand lb.)	Live Weight Equivalent (thousand lb.)	Product Distribution (%)
<u>Alive or Fresh and Frozen</u>			
Boiled	20,940	20,940	55
Meat	3,076	13,074 ^a	34
Canned	985	4,186 ^a	11
Total		38,200	100

a Live weight equivalent obtained by using a factor of 4.25 times product weight of fresh, frozen and canned lobster meat.

The average Canadian landings of lobsters were 46.9 million pounds a year for the period 1954-58. Average exports, live weight equivalent, of 38.2 million pounds were, accordingly, 81.5% of landings. The average domestic disappearance was some 8.7 million pounds a year, or about one-half pound (one-eighth of a pound in edible weight) per head of population.

3. Location and Conditions of Production

Lobsters are caught by traps baited with fresh or salted herring or other kinds of fish. A line of traps consists of 10 to 20 traps fastened about 10 fathoms apart to a long rope anchored and buoyed at both ends. The fishermen haul the line each day when weather permits, hauling up the traps in turn, emptying and re-baiting them and dropping them back to the bottom. The Maritime lobster fisherman usually uses an open boat about 30 feet long, powered with an automobile engine, frequently with a power take-off from the engine to haul the line. He may fish 100 to 300 traps, but with the larger numbers, would probably have a son or relative or a hired man in the boat to assist him. Smaller enterprises - for instance, in Newfoundland - might consist of one man fishing up to 40 or 50 traps from a rowboat or dory.

The American lobster is found only on the Atlantic Coast of North America, from North Carolina to southern Labrador. It is most abundant on the coasts of Maine and the Maritime Provinces and on the south and west coasts of Newfoundland. The gradual warming of the Atlantic Coast waters is thought to be a partial cause of the increase in landings since the early 1940's, and if water temperatures begin to decline, as predicted, after 1960, there may be some decrease in yield on

the more northern fishing grounds, at least.

The lobster fishery is intensive, taking perhaps two-thirds of the legal-sized stock each year.¹ Maintenance of even the present level of landings is dependent upon effective management of the fishery, to limit off-season poaching and the taking of undersized and "berried" lobsters. Closed seasons of varying times and lengths have been established in the different fishing districts, more or less to coincide with the periods when moulting occurs (when the water is warmer and growth more rapid), or with the winter months in northern areas where ice and winter weather prevent fishing. The fishing season lasts from 10 to 12 weeks (starting April 20) in Newfoundland, about 10 weeks (from May 1, 10, or 20) in Quebec and the Magdalen Islands, and through the months of May and June for northern and eastern Prince Edward Island. The season is open from August 10 to October 5 for New Brunswick and Prince Edward Island fishermen in the western part of Northumberland Strait. The only winter lobster fishery is in the Bay of Fundy and southwestern Nova Scotia, from Digby to as far east as Halifax.

The seasonal nature of the lobster catch is indicated in Table 5, which presents the five-year average landings and landed values for each month of the year, by provinces, 1954 to 1958. About 60% of the Canadian lobster catch is obtained in the two months of May and June. Landings are heavy also in August and September (from Northumberland Strait) and in December (western Nova Scotia). Government regulation of the lobster fishery is necessary to prevent over-exploitation of the stocks; without public control, the tendency is for such a common property resource, with a relatively high market value, to be ravaged to the point of extinction, because no individual can reap directly the benefits of his own conservation measures or abstinence. Accordingly, the lobster fishing seasons are carefully regulated and minimum legal size limits have been established in each district. Closed-season poaching and the taking of undersized and berried lobsters have not been entirely suppressed, but conservation measures have been more successful where the fishermen have come to see that the government regulations are in their own interest.

Fishermen in some communities have acted together to limit the number of traps each fisherman may use and even to prevent new fishermen from coming in, but a general effect of the season restrictions with unrestricted entry into the fishery has been a multiplication of boats and gear, with many fishermen competing to get a share of the scant supply in the short fishing season allowed. The usual result is that lobster fishermen get good returns during the first week or two of fishing, but greatly diminished catches during the rest of the open season.

The excess gear represents an increased capital cost to the industry, and a lower catch per unit of effort means increased unit operating costs. Capital losses from storm damage are correspondingly

1 The Commercial Fisheries of Canada, Royal Commission on Canada's Economic Prospects, pp. 24-25.

TABLE 5. FIVE-YEAR AVERAGE LANDINGS AND LANDED VALUES
OF LOBSTERS FOR EACH MONTH, 1954 TO 1958,
CANADIAN ATLANTIC COAST, BY PROVINCES.

Month	Canadian Atlantic Coast Total	Nova Scotia	New Brunswick	Prince Edward Island	Quebec	Newfoundland
A. <u>Average Landings in Thousands of Pounds</u>						
Jan.	1,225	1,141	84	-	-	-
Feb.	405	375	30	-	-	-
Mar.	621	606	15	-	-	-
Apr.	2,157	1,931	32	-	-	194
May	16,241	7,119	1,980	4,073	1,460	1,609
June	11,712	4,313	1,418	2,564	1,319	2,098
July	1,721	614	5	22	242	838
Aug.	3,644	236	2,439	969	-	-
Sept.	3,037	126	2,225	686	-	-
Oct.	642	65	466	111	-	-
Nov.	731	58	673	-	-	-
Dec.	4,585	4,258	327	-	-	-

B. <u>Average Value of Landings in Thousands of Dollars</u>						
Jan.	638	597	41	-	-	-
Feb.	231	213	18	-	-	-
Mar.	375	366	9	-	-	-
Apr.	1,074	1,008	18	-	-	48
May	4,707	2,230	581	1,082	398	416
June	3,620	1,446	459	758	400	557
July	540	233	2	7	73	225
Aug.	1,127	79	754	294	-	-
Sept.	957	42	702	213	-	-
Oct.	219	32	152	35	-	-
Nov.	292	30	262	-	-	-
Dec.	2,122	1,977	145	-	-	-

TABLE 5. FIVE-YEAR AVERAGE LANDINGS AND LANDED VALUES
OF LOBSTERS FOR EACH MONTH, 1954 TO 1958,
CANADIAN ATLANTIC COAST, BY PROVINCES, (Cont'd.)

Month	Canadian Atlantic Coast Total	Nova Scotia	New Brunswick	Prince Edward Island	Quebec	Newfoundland
C. <u>Average Value in Cents per Pound</u>						
Jan.	52.1	52.3	48.8	-	-	-
Feb.	57.0	56.8	59.6	-	-	-
Mar.	60.4	60.4	60.0	-	-	-
Apr.	49.8	52.2	54.3	-	-	24.8
May	29.0	31.3	29.3	26.6	27.3	25.9
June	30.9	33.5	32.4	29.6	30.3	26.6
July	31.4	37.9	47.1	30.0	30.2	26.9
Aug.	30.9	33.3	30.9	30.3	-	-
Sept.	31.5	33.2	31.6	31.0	-	-
Oct.	34.1	48.8	32.7	31.4	-	-
Nov.	39.9	51.4	38.9	-	-	-
Dec.	46.3	46.4	44.3	-	-	-

increased; more traps are smashed, and the fishermen's lines, set close together, become entangled and the gear sometimes buried in silt beyond hope of recovery.

Costs in the lobster fishery are, therefore, much higher than they would be if the annual volume of landings were taken with fewer boats fishing more or less the year around, or as the weather and biological conditions permitted. However, lobster fishing is to some extent complementary to other fishing and farming activities. To the extent that this is so, a somewhat larger entry of fishermen and fishing capital into the lobster fishery may be justified beyond the optimum suggested by the economics of the fishery by itself.

Even in summer, occasional Atlantic storms take a heavy toll of lobster traps and lines. Not only must the fisherman replace lost gear, but before he is able to do so, he may lose valuable fishing time during the short open season. In 1953, the federal Department of Fisheries instituted a scheme to insure lobster traps, calling for a premium of $7\frac{1}{2}\text{¢}$ a trap in areas with a fishing season of less than 90 days, and 15¢ a trap where the season was 90 days or more. The indemnity was set at \$1.50 per trap for losses in excess of 25% of the total number being fished. Wooden traps have an average life of four or five years, so the "25% deductible" clause was included to allow for normal wear and tear. Later adjustments provided for an indemnity and premium varying according to the average value of the fisherman's traps and the length of the season. Currently, the premiums range from 5¢ to 22¢ per trap for the short season, and 10¢ to 35¢ for the long season, the coverage ranging from 90¢ to $\$3.75$ per trap. The actual cost of traps with the requisite rope lines might amount to more than double these figures.

Only a small part of the total number of lobster fishermen make use of the plan, although participation may be nearly complete among fishermen whose losses are consistently heavy because of their location or season of fishing. During the fiscal year ending March 31, 1958, the premium income received under the plan for the entire Atlantic Coast was nearly \$18,000, while the claims paid for damaged traps came to over \$61,000; for fiscal year 1958/59, net premiums were more than \$25,000 and indemnities paid more than \$96,000. The cumulative total of premium income from the inception of the plan in 1953 to the end of March, 1959, was more than \$97,000; of claims paid, nearly \$304,000.

4. Sale by Fishermen

Lobsters are sorted into canning and market sizes, usually by the fishermen on the boat or at the wharf, and the claws are corked unless the lobsters are to be processed immediately. The live lobsters are put into crates, which are fastened to a line and left floating submerged in the water if they are not immediately hauled to market by boat or truck. Delivery is made by the fishermen to the cannery wharf

or to the buyer or co-operative agent on the wharf. In some areas, such as western Newfoundland, fishermen may ship through a pool, delivering their catch to the pool agent at some central point and receiving payment, less handling and transportation costs, pro rata, after the shipment has been marketed.

Grading at the wharf is a comparatively simple procedure. The fisherman has a small rule to use in measuring from the rear of either eye socket to the rear of the body shell, to ensure that the lobster is of the minimum legal size or larger ($2\frac{1}{2}$, $2\frac{3}{4}$, 3, or 3-3/16 inches, according to the district). The smaller lobsters - those less than about a pound in weight - are sold to meat processors. Shipments are inspected and graded again upon arrival at market and these grades, of course, directly determine the returns that will be realized by the fishermen in a pool or co-operative. Independent buyers on the wharf assume the risk of downgrading or loss on market deliveries, and presumably, the price they offer to fishermen is lower on that account.

In outright sale to a processor or exporter or buying agent, the fisherman receives full settlement, less any deductions for gear, gasoline, or other supplies obtained on credit from the buyer. Co-operatives make an initial advance to the fisherman when he delivers his catch, and a final settlement at the end of the season, when all lobsters have been sold. The pronounced seasonal variation in the prices received by the fishermen is apparent from Table 5 C., average unit values being lowest during the summer period of heavy landings and highest in the winter when the supply is light.

The lobster market is competitive, with many buyers and with publicity given daily to prices in the principal markets, such as Boston and New York. Fishermen in more remote areas, particularly those who are forced to ship on consignment, may be in a less favourable position. The fisherman may also face fewer buyers for his "canner" grade lobsters, but prices for these usually vary up and down with the price of "market" lobsters, and the local cannery may have to compete with buyers for other processors who are ready to truck their lobsters from the point of sale.

5. Processing

Annual returns for 1956 to the Dominion Bureau of Statistics were submitted by 188 lobster processors in the Canadian Atlantic provinces. Some 166, or 88% of them, sold lobsters in the shell, but it is likely that many of them were merely selling boiled lobsters; lobsters sold in the shell would not have been processed, strictly speaking, unless they had been boiled, whether or not chilled or frozen, before sale. However, some might have been selling live lobsters in conjunction with the processing of one or more products, such as boiled lobster, fresh or frozen, lobster meat, and canned lobster. The numbers by provinces were as follows:

TABLE 6. CANADIAN ATLANTIC LOBSTER PROCESSORS, 1956

Province	Total Number	Number Selling Lobster		
		In the Shell	Meat	Canned
Newfoundland	10	10	-	-
Quebec	10	9	2	7
Prince Edward Island	30	22	9	23
Nova Scotia	89	84	7	14
New Brunswick	49	41	26	26
Total	188	166	44	70

There is a small Newfoundland pack of canned lobster, probably from small family canning plants. The annual pack estimates for recent years are 300 to 600 cases.

A lobster canning plant does not represent a very large capital investment; the equipment required is essentially a boiler, a can sealing machine, and one or two retorts capable of maintaining the tinned meat at 240°F. for the required time. Consequently, entry into this type of processing is relatively easy. A dealer in live lobsters might find it advantageous to process maimed, weak, or undersized lobsters that could not be shipped alive, or that could be shipped only at a considerable risk of loss. A cannery utilizes liver, roe, and bits of meat from the legs and other edible parts to produce canned lobster paste or lobster tomalley. The lobster processor might also pack fruit, vegetables and fish products in season.

There are few plants packing frozen lobster meat, because freezers and frozen storage capacity require a relatively heavy investment. The three largest frozen lobster processors are E.P. Melansson at Cocagne, New Brunswick, E. Paturel Ltd. at Shediac, New Brunswick, and Maritime Packers at Pictou, Nova Scotia. There are a few smaller operators; some make use of custom freezing and public cold storage facilities. A great deal of lobster meat is sold fresh (not frozen) and this does not require expensive, specialized machinery in the processing.

Lobster processing is necessarily geared to the peak capacity requirements and a short season. Some processors lengthen their operating season by use of holding tanks, through which seawater is pumped. Conley's Lobster Ltd. at St. Andrews, New Brunswick, have improved on this idea still further, with a lobster pound capable of holding a million pounds of live lobsters at Deer Island, sheltered on the inside of the bay facing St. Andrews. For ready availability, some lobsters are held in tanks at the Conley plant. Conley's principal business is the year-around shipment of live lobsters; their meat freezing and canning are done by E. Paturel Ltd. at Shediac.

Lobster processors use local workers, many of them women, whose manual dexterity is an asset in removing the boiled meat from the

shell and packing it in tins. Much hand labour is required, but the prevailing wage rates for women are low in many areas, and the labour cost is small in comparison with the high value of the product.

Probably the improvement of facilities for the production and distribution of fresh and frozen lobster meat has constituted the principal advance during the past decade. The more important improvements in canning techniques were made in an earlier period. Lobster poaching gives some small "backwoods" canneries the advantage of cheap lobsters, purchased at perhaps less than half of the usual market price.

It is not apparent that the lobster industry has become much more concentrated during the past 10 years. Packing lobster meat is still a hand operation, which cannot be replaced by automatic machinery. Consequently, any economies of scale in lobster canning would be small. Because of the large investment required, the larger plants control most of the production of frozen lobster meat, and there may be some advantage to larger firms in the flexibility and complementarity achieved in carrying out different types of processing, as well as some economies in marketing.

Canned lobster requires only dry storage like most grocery items. Fresh and frozen lobster products require low temperature storage and transportation, and a more rapid turnover because of their limited shelf life.

Products, other than live lobster, are boiled lobsters in the shell, chilled and frozen meat, lobster tomalley, and lobster paste. "In the preparation and canning of tomalley, only the liver (green), roe, meat from the legs, thumbs and body, and other edible parts of the lobster that are fresh, clean, and sound, shall be used."¹ Lobster paste is made from the same ingredients as tomalley, with the addition of spices and artificial colouring, and may contain filler not exceeding 2% by weight of the finished product.²

Canned lobster is packed in three sizes of cans: three, six, and 12-ounce sizes containing, respectively, $2\frac{1}{2}$, five, or 10 ounces drained weight of lobster meat. The standard case of canned lobster is one of 96 six-ounce tins, or the equivalent. Much of the fresh and frozen meat is packaged in the 12-ounce tin, but larger and smaller packs are also produced.

Lobster canneries must have a permit to operate, issued after federal Department of Fisheries inspectors have certified that certain minimum standards are met in respect to construction and equipment of the cannery and operating methods and sanitation. A processor of fresh or frozen lobster meat must comply with the sanitary requirements prescribed by the Meat and Canned Foods Act and the regulations, and is

1 Meat and Canned Foods Act - Canned Fish and Shellfish and Cannery Inspection Regulations, SOR/54-694, Section 19(6).

2 Ibid., Section 19(7).

subject to daily inspection to ensure that the requirements are carried out.

Standards for four grades of canned lobster are set out in the regulations,¹ the first three being "Extra Fancy Quality", "Fancy Quality", and "Standard Quality". All parcels or lots of canned lobster falling below Standard Quality, but found to be wholesome and fit for human food are designated "Sub-Standard" and so labelled. The size of sample by the fish inspection laboratory, necessary to establish these grades, is laid down in the regulations, and "Government Inspected" labels showing the grade so established can then be used on each can in the lot.

Average values of the principal products f.o.b. plant are shown in Table 7. Proximity to United States markets and higher winter prices are the principal explanations for the higher average values obtained in Nova Scotia and New Brunswick for lobsters marketed in the shell. Average values for fresh and frozen lobster meat were in the vicinity of \$1.60 a pound, and were, of course, greatly influenced by New Brunswick's production, which amounted to 70% of the total over the five years 1952 to 1956, and 80% in 1957. The average f.o.b. values of more than \$65.00 per standard case of canned lobster represent gross values of about \$1.78 a pound for the meat, canning cost included.

TABLE 7. AVERAGE VALUES AT PLANT OF LOBSTER PRODUCTS, QUEBEC AND THE MARITIME PROVINCES, 1952-56 AND 1957^a

Province	In Shell		Meat		Canned	
	1957	1952-56	1957	1952-56	1957	1952-56
	(\$/lb.)		(\$/lb.)		(\$/case)	
Nova Scotia	47.1	45.8	2.02	1.63	64.22	65.00
Prince Edward Island	33.6	37.3	1.35	1.60	64.00	66.75
New Brunswick	42.7	49.2	1.52	1.59	65.00	64.01
Quebec	41.0	39.5	1.96	1.96	74.65	64.21
Maritimes and Quebec	44.0	46.1	1.58	1.62	65.36	65.43

a Computed from quantity and value data in D.B.S., Fisheries Statistics of Canada, 1957, Table 3.

Among the provinces there were, undoubtedly, considerable differences in the raw material cost in processing, arising out of the varying production conditions and market requirements. Some United States markets (for example, the state of New Hampshire) require fresh

¹ Op. cit., Section 74.

or frozen lobster meat to be processed from "market" sized lobsters. At times and places, the price paid for "canners" may be as high as that for "market" lobsters, and in some areas where the minimum legal size is three or 3-3/16 inches carapace measurement, the lobsters landed may be nearly all "markets". Lower summer prices are, of course, a major factor in processing costs - accounting for the concentration of processing in the northern areas of the Maritimes.

6. Distribution - to Wholesale, Hotels and Restaurants

Canadian dealers and processors sell to wholesalers and through brokers in the United States and Canada. Some shipments are made directly to hotels and restaurants without the intermediary services of a broker or wholesaler. Canned lobster is sold like other canned goods to wholesalers, or directly to chain stores. Some restaurants in central Canada order live lobsters from Boston, claiming that Canadian suppliers cannot, or will not, assure quick and scheduled delivery.

The chief markets for lobsters are in the large cities. Montreal and Toronto probably account for the greater part of Canadian consumption. Western cities have to meet high transportation costs from the Atlantic seaboard.

The Canadian customs tariff rates on lobster products are as follows:

<u>Tariff Item</u>	<u>Tariff Rates</u>		
	<u>BP</u>	<u>MFN</u>	<u>GEN</u>
128 Lobsters, fresh	Free	Free	25%
128a Lobsters, prepared or preserved	17½%	22½%	30%

Lobsters and lobster meat, canned or not canned, are admitted free of duty into the United States under U.S. Tariff Paragraph No. 1761.

Live lobsters are valuable enough to bear the cost of air freight, particularly when speedy delivery is required, or when air transport reduces considerably the risk of loss. Efforts have been made with some success to develop packaging that will admit air to the lobsters and keep them moist without direct contact with fresh water, while keeping gross weight to a minimum. Recently, air shipments to Europe have been made using dry wood shavings as packing material.

A special commodity rate on Trans-Canada Airlines brings lobsters from Stephenville, Newfoundland, to St. John, New Brunswick, at \$5.50 per cwt. (100 pounds minimum) or to Toronto at \$10.50 per cwt. General air cargo rates apply from Maritime centres, e.g., from St. John, New Brunswick, to Montreal, \$4.70 per cwt., and to Toronto, \$8.00 per cwt.

Following are examples of railway express rates on less-than-carload shipments of lobsters and lobster products, effective from July 31, 1957:

LOBSTERS - LIVE OR COOKED (NOT IN GLASS OR SEALED CANS)

(In Cents per 100 Pounds)

	From		
	St. Andrews, N.B.	Halifax, N.S.	
TO	St. John, N.B.	Digby, N.S.	Yarmouth, N.S.
	Rate	Rate	Rate
Montreal	315	345	375
Ottawa	370	400	430
Toronto	495	530	555
Windsor	600	-	-
Quebec	-	-	345

(Rates from St. John, New Brunswick, and Halifax, Nova Scotia, are mostly competitive rates, which do not apply from, to, or between intermediate points.)

SPECIAL LOCAL TARIFF RATES ON LOBSTER MEAT IN CANEX
CONTAINERS (IN CENTS, FOR CONTAINER CONTAINING NOT
MORE THAN 105 LB. NET WEIGHT OF LOBSTER MEAT).

	FROM	
	Shediac, N.B.	
TO	In Glass or Sealed Cans	Not in Glass or Sealed Cans
Quebec, P.Q.	765	660
Montreal	850	725
Toronto or Hamilton	1,255	1,050
Sarnia, Ont.	1,360	1,130
Windsor, Ont.	1,390	1,150
Fort William, Ont.	2,055	1,675
Winnipeg, Man.	2,190	1,780

Assuming a weight of about 40 pounds per standard case of canned lobster, the first-quoted rates above represent a transportation cost of \$1.25 to \$1.50 per case from Maritime centres to Montreal.

Wholesale and retail price series are available only for canned lobster, Fancy Quality. Unweighted year averages of the monthly

quotations are given in Table 8 following. In some years in which substantial price changes took place, the unweighted averages give an unsatisfactory picture of the wholesale-retail spread because of lags in the adjustment of retail prices to changing wholesale prices.

TABLE 8. UNWEIGHTED YEAR AVERAGES OF MONTHLY WHOLESALE AND RETAIL PRICES OF CANNED LOBSTER, FANCY GRADE, IN MONTREAL AND TORONTO, 1949 TO 1958a.

(Case = 48 x 5-oz. and Tin = 5-oz.)

Year	Montreal			Toronto	
	Wholesale	Retail		Wholesale	Retail
	(\$/case)	(¢/tin)	(¢/tin)	(¢/tin)	(¢/tin)
1949	32.37	67.4	71.9	66.6	72.3
1950	32.97	68.7	74.2	66.4	71.1
1951	32.94	68.5	74.7	67.7	73.8
1952	34.32	71.5	76.0	69.6	74.4
1953	33.45	88.2	88.7	86.3	86.2
1954	38.09	79.3	92.5	81.8	87.3
1955	33.70	70.2	82.8	71.0	80.6
1956	36.53	76.1	87.6	77.4	84.3
1957	37.79	78.7	89.3	79.4	88.7
1958	40.65	84.7	94.7	86.6	94.1

a Computed from mid-month wholesale prices and first-of-month retail prices published in D.B.S., Monthly Review of Canadian Fisheries Statistics.

The Montreal wholesale price may be compared with the average values at plant of \$65.36 and \$65.43 shown in Table 7. The 1957 average price in Montreal (\$37.79-doubled) represents a price of \$75.58 for a standard case of 96 five-ounce tins, compared with an average f.o.b. plant value of \$65.36. The indicated processor-to-wholesaler spread of \$10.22 (about 10¢ a tin) would include railway transportation costs in the neighbourhood of \$1.50 per case. Computed on the basis of the 1952-56 averages, the markup was only about \$5.00 per case.

7. Retail and Restaurant Distribution

Lobsters are served usually in the more-expensive eating places, where the meal charge includes a heavy service loading. The price-elasticity of demand for lobster under these conditions may be relatively low; it is a derived demand and lobster price changes need not alter proportionately the price of the meal. On the other hand, one would expect the income-elasticity of demand for lobsters, a luxury food, to be relatively high. The demand for lobster meals is usually strong in prosperous times.

The markups on the live and fresh and frozen forms are greater than on canned lobster because of the special care required in handling and the greater risks involved in dealing with these forms. Also, canned lobster can be easily stored to level out the supply in accordance with demand; consequently, it is not subject to the wide seasonal price variations that characterize the market for live lobsters and, probably, fresh and frozen lobster meat.

8. Measurement of the Price Spread

Previous discussion of the local and seasonal variations in the landed prices of lobsters has indicated the impossibility of accurately determining the raw material cost of canned lobster even for one region, hence measurement of a fisherman-retail spread can only be on a sample basis. No comparisons can be made for the other lobster products because price series are lacking. However, sample price spread computations are presented in Table 9, based on landed prices in June of each year in Souris, Prince Edward Island, and Montreal wholesale and retail price quotations one or two months later.

The Montreal retailers' margin on selling price evidently increased during the decade, ranging from 8% to 16%. Based on somewhat theoretical estimates of raw material cost, the fishermen's share of the retail dollar spent for canned lobster in Montreal was of the order of 42% or 43%.

TABLE 9. FISHERMEN'S SHARE OF THE RETAIL DOLLAR SPENT FOR
CANNED LOBSTER AT MONTREAL, BASIS JUNE 15 LANDED
PRICES FOR LOBSTERS AT SOURIS, P.E.I.^a

Year	Aug. 1 Retail Price (at Montreal) (¢/5-oz. tin)	Mid-July Wholesale Price (¢/5-oz. tin)	Landed Price (¢/lb.)	Raw Material Cost ^b (¢/5-oz. tin)	Retailer's Markup on Selling Price (%)	Fishermen's Share of Retail Value (%)
1949	70.6	65.1	24	30	8	42
1950	74.2	68.6	22	27	8	36
1951	73.9	68.4	28	34	7	46
1952	79.4	71.4	22 ^c	27	10	34
1953	88.8	90.6	43	52	-	59
1954	86.9	75.7	30	37	13	43
1955	80.6	69.0	30	37	14	46
1956	88.1	74.0	30	37	16	42
1957	89.6	78.3	30 ^c	37	13	41
1958	96.6	81.5	33	41	16	42

a Price quotations from D.B.S., Monthly Review of Canadian Fisheries Statistics.

b The five-ounce tin requires 26 ounces of live lobsters (6-1/8 ounces meat multiplied by 4.25). It is assumed that "canner" grade lobsters were sold for three-quarters of the price quoted (presumably for "market" grade). Computed raw material cost is, therefore:

$$\text{Landed Price} \times \frac{3}{4} \times \frac{26}{16}$$

c May quotations.

COD FILLETS

1. Characteristics of the Raw Material

The Common Atlantic or Rock Cod (*Gadus callarias*) constitutes about two-thirds of all of the known Atlantic resources of demersal or groundfish species, which include, as the most important commercially, cod, haddock, hake, pollock, cusk, redfish, halibut, and the various smaller flatfish species.¹ A large Atlantic cod may be 25 to 50 pounds or more in weight. (One more than six feet long, weighing 211 pounds, was caught in New England waters in 1895.) Modern long-liners and draggers use powered hauling gear, but to the small-boat fisherman, using hand-lines, hauling his catch up from the depths can be laborious. The fish must be handled individually in gutting and beheading, washing and stowing with ice in the hold; hand methods are used in forking the fish into the unloading bucket or on to the wharf and, too often, inside the plant in carrying or wheeling tubs or trays of fish or fillets or offal from one place to another.

Automatic machinery, such as filleting and skinning machines, operates more effectively if the fish are fairly uniform in size. This is often the case if the boat has made all or most of its catch in one place; apparently one "year-class" may be predominant in a school. Usually, too, the fish are culled into standard size groups when being weighed in on the plant wharf. Modern filleting plants use continuous production line techniques, moving the fillets along the line from filleters to candler to weighers and packers by conveyor belt. Offal from the filleting line also moves by chute and flume or conveyor to the exit loading point or directly to the fish meal plant.

While fresh and frozen fillets and lightly smoked fillets represent the higher-valued use of cod, sold principally in the high-income North American market, dried salted cod is still produced in quantity for the traditional markets in the tropical and semi-tropical countries of the Caribbean and southern Europe. Salting and drying to a considerable extent represents a marginal use for cod, to be resorted to only when the catch cannot be marketed in the fresh or frozen form. To some extent, also, the cured and fresh or frozen forms are joint products of the fishery; large cod are unsuitable for filleting (except for smoked fillets); some quantity can be marketed fresh or frozen whole as steak cod, but much of it must be split and salted for later drying - the larger, thicker fish are preferred in dried salted cod. In areas such as the Gulf of St. Lawrence where winter hinders or prevents fishing operations, filleting plants may reduce their peak loads and provide for winter employment of some of the plant facilities and staff by splitting and salting the large fish, later processing it into boneless salted or ordinary cures after fish landings have ceased for the season.

1 Halibut and other flatfish, although true "bottom-feeders", are not classed as groundfish in commercial usage.

Very little codfish is canned. A possible future extensive use is in the form of "fish flour". This can be made from cod or other species, five times as rich in protein as beefsteak per pound of weight, to be used as an additive to cereals, wheat flour, milk, etc., for the enrichment of human diets. The residue from filleting, constituting about two-thirds of the total landed weight of the fish (as well as any fish found to be unsuitable in quality for filleting), is usually processed into a protein meal used as a feed supplement for livestock and poultry. Glue is made from fish skins and heads.

If there have been any recent improvements in the quality of cod landed, these have been mainly the result of experimentation, research and education in better techniques in handling, stowage and icing on board the fishing vessel. Use of larger mesh sizes in trawl nets by international agreement through the International Commission for the Northwest Atlantic Fisheries has increased the average size of fish caught in certain areas (and there is evidence that the chief purpose - an increase in the basic stocks - has been achieved in some degree).

2. Areas and Conditions of Fishing

The principal cod fishing grounds are the Grand Bank of Newfoundland and numerous other banks off the coasts of Maine, Massachusetts, Nova Scotia and Newfoundland, and in the Gulf of St. Lawrence, but stocks of cod are found from Cape Hatteras to Greenland and Baffin Island.

Although the cod typically stays near the bottom, it may come to the top in pursuit of small fish or squid, hence may be found anywhere from the surface to a depth of 250 fathoms. During a short summer season, cod are taken in great numbers in trap-nets on the northwest coast of Newfoundland when they follow the capelin, a small fish which comes inshore to spawn. At other times they congregate somewhat less densely over sandy or rocky, pebbly ground in the comparatively shallow water of the banks and inshore areas. Cod prefer cooler water and, although they frequent water in the temperature range from 32°F. to 50°F., the best catches are made in the lower half of this range.

Cod spawn, for the most part, during the early spring months. The female lays from three to nine million eggs, depending upon her age and size. The growth of the cod depends upon water temperature and available food supply. Cod from the banks off Nova Scotia enter the fishery at about four years of age. A 10-pound cod, 30 to 32 inches in length, would be about nine years of age on the Grand Bank, or about six years in the Bay of Fundy.

The various cod stocks do not intermix to any great extent because they apparently do not often cross the "deeps" that separate various banks from each other and from the mainland. The movements onshore and offshore, and from bank to bank, are caused by the search for food, suitable water temperatures and proper spawning conditions. There is a

movement of cod stocks out of the Gulf of St. Lawrence to the banks off Nova Scotia in the fall and back again in the spring. The gradual warming of Atlantic waters in recent years has been accompanied by a northward movement of cod stocks. A gradual cooling trend, predicted to begin about 1960, might be expected to bring about a reversal of this movement and increase the density of stocks on the nearer Maritimes fishing grounds.

Present exploitation of the northwestern Atlantic cod stocks by all nations is of the order of 1,100 million pounds a year, of which Canadian landings constitute about two-thirds.¹ This rate of exploitation is estimated to be only about 16% of current stocks. The more distant stocks will be at best only lightly fished for some years to come, but a considerable increase in cod landings from the nearer banks could be expected to follow a rise in the demand for cod products.

The annual quantities and values of cod landed in the Canadian Atlantic Provinces are shown in Table 1. The annual totals in recent years have not fluctuated widely (less than 10% from the average), but there has been a gradual decline in cod landings for the past five years in the provinces of Newfoundland and Nova Scotia, the largest producers.

Fluctuations in annual cod landings could be caused in part by differences in availability; trips will be lengthened and catches smaller when the fish are difficult to find. Fishing effort is, to a considerable extent, directed to or from other species such as haddock and flatfish in accordance with market demand and resultant price differentials; the processing plant may be expected, for instance, to supply a proportion of sole, haddock and redfish fillets along with cod fillets. Cod landings might, of course, share in a general reduction in fish landings resulting from unusually difficult weather or from adverse changes in cost-price relationships for the fishing industry.

Cod, in fact, varied only between 43% and 49% as a proportion of the landed weight of all species for the east coast during the five years 1954-1958. The importance of Newfoundland among the provinces as a producer of cod is indicated by the following figures: east coast cod landings 1954-1958 averaged 610 million pounds yearly, of which Newfoundland contributed 63%, Nova Scotia 20%, Quebec 10%, New Brunswick 6%, and Prince Edward Island 1%. Roughly one-third of the east coast cod landings in the past five years went into the production of fresh and frozen fillets. The proportion was much smaller (about one-quarter) for Newfoundland, where the production of saltbulk and dried salted cod was correspondingly important.

The seasonal nature of cod landings is indicated by the monthly data available in Tables 1 to 6 of the Appendix. The freeze-up puts an end to fishing from ports on the Gulf of St. Lawrence in Quebec, northern New Brunswick, Prince Edward Island and western Newfoundland, and stormy winter weather restricts fishing operations from other ports that remain open. Landings are also affected by the seasonal movements

¹ See The Commercial Fisheries of Canada, Royal Commission on Canada's Economic Prospects, p. 13.

TABLE 1. QUANTITY AND VALUE OF ANNUAL LANDINGS OF ATLANTIC COD,
CANADIAN EAST COAST PROVINCES,^a 1949 TO 1958

Year	Canadian Atlantic Coast ^b	Nova Scotia	New Brunswick	Quebec	Prince Edward Island	Newfoundland
A. <u>Landed Weight in Thousands of Pounds</u>						
1949	240,589	147,616	26,114	60,755	6,104	b
1950	232,922	145,110	24,021	59,447	4,344	b
1951	217,222	142,259	23,942	46,806	4,215	b
1952	232,610	150,129	24,265	54,766	3,450	b
1953	524,157	115,588	19,416	44,792	3,060	341,301
1954	651,971	129,324	25,320	32,247	4,700	460,380
1955	582,966	129,473	29,455	41,324	6,063	376,651
1956	647,559	125,473	38,957	76,353	8,525	398,250
1957	642,494	115,345	38,814	79,172	7,588	401,575
1958	527,270	110,548	39,176	69,664	7,749	300,133
B. <u>Landed Value in Thousands of Dollars</u>						
1949	7,127	4,902	603	1,455	167	b
1950	6,496	4,613	530	1,272	83	b
1951	6,650	4,705	626	1,222	97	b
1952	7,356	5,356	559	1,343	98	b
1953	12,560	3,795	414	855	75	7,421
1954	16,263	4,529	722	714	125	10,173
1955	14,206	4,035	818	938	163	8,252
1956	16,149	4,185	972	1,861	249	8,882
1957	15,030	3,581	946	1,638	156	8,709
1958	13,110	3,711	1,154	1,708	177	6,360
C. <u>Average Value per Pound, Landed Weight, in Cents</u>						
1949	3.0	3.3	2.3	2.4	2.7	b
1950	2.8	3.2	2.2	2.1	1.9	b
1951	3.1	3.3	2.6	2.6	2.3	b
1952	3.2	3.6	2.3	2.5	2.8	b
1953	2.4	3.3	2.1	1.9	2.5	2.2
1954	2.5	3.5	2.9	2.2	2.7	2.2
1955	2.4	3.1	2.8	2.3	2.7	2.2
1956	2.5	3.3	2.5	2.4	2.9	2.2
1957	2.3	3.1	2.4	2.1	2.1	2.2
1958	2.5	3.4	3.0	2.5	2.3	2.1

a Annual data from the December issues of D.B.S., Monthly Review of Canadian Fisheries Statistics. 1958 figures are preliminary.

b Newfoundland landings were not included for the years 1949 to 1952, inclusive.

of cod stocks, the most notable example being the summer trap-net fishery of northeastern Newfoundland, when the inshore waters teem with cod.

Thus, the unit cost of cod landings may be lower in the summer, but processing equipment adequate to handle the summertime peak load would be much greater than the capacity requirements during the balance of the year. Fish in excess of filleting and freezing capacity can be split and salted and held for later processing into dried fish; hence, the production of dried salted cod may be essential to economic operation of the cod fishery in areas forced to depend upon heavy summer landings. Any receipts from the sale of dried salted cod in excess of its direct processing and marketing costs and the marginal cost of the additional cod landings, would contribute to reduce the joint or overhead costs of production in the fishery - however, those joint costs and the returns from the various products might be shared between the fishermen and the processors in the industry.

3. Preparation and First Sale by Fishermen

The official statistics purport to show the quantity of landings in the state most commonly landed or first sold for each species of groundfish. For codfish the landing statistics are given in terms of gutted head-on weight. While this is the predominant form, first sales by fishermen present many variations from this form, both geographically and over seasonal and longer periods of time. The variations range from the whole round form, the state in which the fish is taken from the sea, to salted and smoked forms, ready for retail sale, which have been prepared by the fisherman himself.

The description of fishermen's selling or primary marketing which follows is limited to the transactions associated with the transfer of codfish from fishermen to buyers mainly for use as fillets. Attention has been called, however, to the variations in form in which the fish is sold, because this point is pertinent in later discussion on the prices to be used in measuring the fishermen-retail price spread.

The cod are dumped on the deck of the fishing vessel from the drag net as it is hauled, or taken from the line or gill-net as it is brought in. The fishermen gut the fish and stow them below in the pens, packed with ice to cool them rapidly and maintain them at close to freezing temperature, as well as to minimize contact of the fish with the wood or metal of the pens and with each other. The fishermen must work fast to get the fish gutted and stowed below-decks before the next haul and to minimize its exposure to the heat and sun on deck. They must work long hours when on the fishing grounds to complete the trip and get the fish back to port before the earliest part of the catch is too old.

Vessels from Halifax or Lunenburg might travel 500 or 600 miles to fishing grounds on the Grand Banks and a trip might entail four or five days' time en route to and from the fishing grounds in addition to fishing time. The larger draggers in 1956 averaged five to seven

days at sea per trip from Nova Scotia ports, four to five days in the other provinces; an occasional trip lasted 15 or 16 days. Long-liners were at sea on the average about one day per trip in Newfoundland, a day-and-a-half in Quebec, and more than three days in Nova Scotia.¹

The inshore fisherman typically lands his fish at the plant wharf the day it is caught. Quality would be improved if he carried ice in which to pack his catch, but this is seldom done; ordinarily the price received would be the same whether he used ice or not.

As the cod are unloaded from the vessel and weighed in on the plant wharf, they are usually culled into size groups for which specified prices are paid, and there is some grading for quality insofar as damaged fish or fish fit only for reduction into fish meal are segregated and paid for at a lower price. The usual grade sizes are scrod, market and steak; the size divisions vary somewhat according to local practice or the use to be served, but the intermediate grade, "market" cod, is usually from about four to 10 or 12 pounds weight.

Plant competition for fish may be competition for fishermen; the small-boat inshore fisherman may be unwilling or unable to operate far from home, but the larger vessels can change their base of operations. Hence, the presence of only one buyer - one fish plant - at a given location does not preclude a considerable degree of competition for the fishermen's catch. But price is not the only consideration influencing the fisherman's sale; others may be extension of credit for gear and supplies by the buyer and provision of facilities for storage of bait. A large and efficient plant may be able to establish leadership in the setting of prices effective over a large extent of coastline - an ability likely to be enhanced if the firm can ensure itself a considerable volume of supply by owning or controlling a fleet of fishing vessels.

Fishermen engaged in the groundfishery on the Canadian Atlantic coast, perhaps through tradition, seem to have accepted a relatively stable "season" price for cod. There is some variation between winter and summer seasons with a premium of as much as a cent a pound or more being paid in the winter to ensure a greater volume of supply during the more difficult fishing season. Although cod is marketed by processors in various fresh, frozen and cured forms, each with a specific market value, in general the same price is paid to fishermen at any particular port of landing regardless of the final utilization of the fish.

This is, in part at least, the explanation for the considerable differences in landed cod prices existing at the same time in different localities. For example, cod prices at mid-June, 1958, were, at Caraquet, New Brunswick, 2 $\frac{3}{4}$ ¢ a pound for market and 1 $\frac{1}{2}$ ¢ for scrod; at Louisbourg, Nova Scotia, market and steak cod brought 3¢ to 3 $\frac{3}{4}$ ¢ and

¹ See John Proskie, Operations of Modern Long-Liners and Dragners, Atlantic Seaboard, 1956, Economics Service, Department of Fisheries of Canada, Ottawa, 1957, Table 9, p. 17.

scrod $1\frac{3}{4}\phi$; at Halifax and Lunenburg, Nova Scotia, steak, market and scrod brought $3\frac{3}{4}\phi$, $3\frac{1}{4}\phi$ and $1\frac{3}{4}\phi$, respectively. At St. John's, Newfoundland, the price was $2\frac{1}{4}\phi$ for steak and market and $1\frac{3}{4}\phi$ for cod in the round, and at Harbour Grace, the price was 2ϕ for ungraded cod. Much of the cod landed in Nova Scotia ports is marketed as fresh fillets, whereas the Newfoundland catch is processed, some into the lower-valued frozen fillets, but most into salted cod for low-income markets in Caribbean and Mediterranean areas.

The division of the proceeds of the sale of fish among the members of the fishing enterprise is made according to a share or "lay" system, which varies according to locality, type of vessel, etc. Certain expenses are deducted from the gross receipts; the remainder is divided into boat and crew shares, and the latter into individual crew shares.

Settlement by the plant buyer will include deductions for supplies such as ice and fuel oil obtained by the fishermen. In the outports, dependence upon the local merchant for gear and supplies on credit is probably somewhat less than it used to be, but may be still considerable, with the fisherman accordingly obligated to sell his catch to the merchant who has given him credit.

In recent years, the trend has been away from the complete processing of dried salted cod by outport fishermen, although some still spread salted fish to dry on the "flakes" or on the beach. These may now have a filleting plant within reach as a market for at least part of their catch, or may sell split fish to a local buyer who has large "pickling" facilities for the production of saltbulk ("green-salted" cod), or may process their catch to the saltbulk stage themselves. The saltbulk is then sold to commercial driers for final processing into dried salted fish. A large part of Newfoundland codfish landings is now sold as saltbulk to Nova Scotia drying plants.

As for the filleting plants, the major portion of their raw material is now obtained from offshore fishing vessels - trawlers or draggers or long-liners - which ensure a more regular and predictable large volume of supply than inshore fishermen. The offshore vessels also offer more flexibility in supply; they can, to a considerable extent, direct their fishing efforts towards species in greatest demand, whereas the small-boat fisherman must take whatever is available to him reasonably close to shore.

4. The Filleting Industry

In spite of a recent trend towards concentration of processing activities, a large number of small independent filleting plants are still to be found in the Atlantic coast provinces, particularly in the production and sale of fresh fillets in Nova Scotia and New Brunswick. Freezing operations require a greater investment in plant and equipment, and present greater technical management problems; therefore, frozen fish plants tend to be larger in size, and at the same time,

more diverse in products and more specialized in management, with separate production, sales, and cost accounting divisions. There is also some horizontal expansion in the form of branch plants and vertical integration of fishing, processing and marketing operations through divisions of the same company.

Notwithstanding the large number of small filleting plants, and because frozen fillets are produced in three times the quantity of fresh fillets, about 30 plants in the Maritime Provinces - some of them branches of one firm - account for more than three-quarters of the annual Maritimes production of fresh and frozen fillets. Frozen fillet production is even more concentrated in Newfoundland. There, government policy has favoured the establishment of large plants in suitable locations and the movement of fishermen and their families from the outports into these centres, where they may sell their catch to the filleting plant and where community services can be more easily provided.

Products of the fresh and frozen industry include fresh and frozen fillets, frozen blocks and slabs (for conversion into fish sticks), breaded, cooked or uncooked fish sticks, lightly smoked fillets, and fresh and frozen dressed (whole) fish. By-products include fish meal and liver and other oils. There may be also some degree of specialization in certain species; for instance, a plant may concentrate much of its vessel and processing activity on redfish (ocean perch). If a plant also engages in canning or curing operations, this may be the result of special circumstances - possession of the necessary equipment, and the need to provide a market for local fishermen or to achieve year-around use of plant labour and facilities.

The wide seasonal fluctuations in the supply of fish and its perishability impose on the processing plant the need for rapid processing, and capacity adequate to handle the peak seasonal loads. This may entail much idle capacity at other seasons of the year. The establishment of a profitable operation may, therefore, require a close forecast of the regularity and volume of supply of fish, as well as of market demand and local labour supply, in their relation to the best size of plant.

Filleting plants, if located in one of the larger ports, will have a reserve supply of labour to draw upon, but the availability of other types of employment means that the fish plant will have to pay approximately "the going wage" to secure workers. The establishment of a plant in a more isolated fishing settlement may be accompanied by an influx of workers as fishermen and their families move in to be closer to the plant. However, wage rates tend to be lower in such centres with few alternative employment opportunities. Usually, one-third or more of the workers in a filleting plant are women, paid at much lower rates than the men. If the head of the family provides the main support, wives and daughters may be hired at wage rates lower than they would require if fully self-supporting.

Most of the larger filleting plants are now unionized and pay wages on an agreed union scale. Current Nova Scotia rates range from \$1.05 to \$1.16 an hour for cutters and skimmers, \$0.92 to \$1.08 for

general labour, and 77¢ to 81¢ for the women who carry out candling, inspecting, weighing and packing duties on the production line. Newfoundland rates, except at St. John's, are lower: 80¢ to 89¢ for filleters and 52¢ to 62¢ for women, for example.¹ Wage rates in northern New Brunswick, Quebec, and Prince Edward Island plants are for the most part not far different from the Newfoundland rates.

The cost of labour is determined, of course, not only by wage rates, but by the productivity of that labour. In recent years productivity has been increasing, at least in some filleting plants, as a result of improved equipment, greater mechanization of operations, and the growth of worker and management skills. Without data on comparative costs and outputs over the past 10 years, it is impossible to say whether physical productivity increases in filleting plants have been more than sufficient to balance the effects on costs of rising wage levels and heavy investments in plant and equipment.

Labour productivity is closely related to the size and condition of the fish being filleted. A skilled cutter might, for instance, achieve a rate of 400 pounds of raw cod (say, 135 pounds of fillets) an hour on four- or five-pound cod, compared with double the amount on 12-pound cod at the upper limit of the "market" classification. But greater speed in filleting might be at the cost of a lower recovery rate of fillets from the raw material; the speed and recovery rate are both related to the operator's skill.

The generally accepted figure for the yield of cod fillets from head-on dressed cod as landed is 33%, but skilled cutters may achieve up to 37% or 38%, depending upon the condition of the fish. The yield in cutting for blocks is lower, usually around 30% or 31%.

Overhead cost per unit of product might be minimized by around-the-clock or three-shift operation of the plant to achieve "capacity" output, at least during the summertime period of peak landings. If not sufficient workers are available to operate two or three shifts a day, it may be necessary to keep the staff at work for extra hours, paying overtime rates one-third or one-half greater than the standard rate, in order to process an accumulated stock of fish before it becomes unfit. Apart from the likelihood that workers' productivity declines when they are tired, the overtime rates mean an increase in production costs per unit of output, incurred only because the alternative is a loss through spoilage of fish or the dissatisfaction of the fishermen if they are forced to restrict their landings to what the plant can accommodate in a one-shift daily operation. Of course, there should be some reduction in unit overhead costs, as a result of fuller use of plant facilities, to set against the increase in unit labour costs arising out of overtime operation.

The use of mechanical skinning machines and, latterly, of filleting machines in east coast plants has increased greatly during the

¹ See Appendices C, D, E, F and G, Brief of the Newfoundland Federation of Labour, Proceedings of the Royal Commission on Price Spreads of Food Products at St. John's, Nfld., May 3, 1958.

past 10 years. The growth of quick-freezing capacity began somewhat earlier, keeping pace more or less with the growth in filleting production. Multiple plate contact freezers are in general use for freezing fillets and blocks, although air blast freezers offer more flexibility in the size and shape of packages to be frozen, along with, possibly, a lower initial cost.

Frozen cod fillets are packed in one-pound "consumer" packs and in five-pound bulk packs containing about six cellophane-wrapped fillets for the restaurant and institutional trade. Fillets are also frozen into larger blocks or slabs for the production of breaded, cooked or uncooked fish sticks. Fresh cod fillets are packed, 20 pounds in a wooden box, in layers separated by parchment paper.

The one-pound cartons are machine-wrapped in a printed coloured wrapper before going into the freezer. After freezing, the cartons are packed 12 in a container and four containers (48 cartons) in a strong fibreboard shipping carton, and these are placed in the cold storage room until the shipping time arrives. The shipping carton holds 10 of the five-pound cello packs.

There is some differentiation by grade of pack, according to the quality of the raw material. Fish of indifferent quality is not packaged under a "premium" label, but may be wrapped under another brand name. In other instances, where there is no second grade label, a few hundred pounds a day of broken or torn fillets may be packaged and sold at a discount of 2¢ or 3¢ a pound. This special sale price represents a salvage value for the torn fillets. When they are frozen into a one-pound piece, the fragments and tearing may not be noticeable to the consumer.

Greater care in filleting fish for blocks is required to ensure that the small bones at the nape are cut out, but ragged fillets and fragments can be included in the block without difficulty. The production of fish sticks is carried out by a few plants with the necessary specialized equipment, in the quantities required for domestic sale, but the level of United States import duties on fish sticks is designed to preclude Canadian sales on that market. However, American fish stick processors get much of their supply of cod and haddock blocks from Canadian plants.

The principal species filleted by Atlantic coast plants are cod, haddock, redfish (rosefish or ocean perch), wolf fish (ocean catfish), hake, cusk, halibut and other flatfish, including plaice, witch, flounders and yellowtail (which are all marketed as "sole" fillets). Production figures for the years 1949 to 1958, inclusive, appear in Table 2 below.

It may be observed that cod fillets comprised nearly one-half of the annual fillet output, and that frozen fillets in total for the region were produced in five or six times the quantity of fresh fillets. The proportion of fresh fillets was much higher for Nova Scotia. Of the 65 million pounds of frozen cod fillets and blocks produced in 1958, it is estimated that slightly more than one-half was blocks and slabs

TABLE 2. CANADIAN EAST COAST PRODUCTION OF FRESH AND FROZEN FILLETS
AND BLOCKS, BY SPECIES, 1949 TO 1958

(Thousands of Pounds)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Frozen										
Cod	24,182	33,745	31,943	41,396	30,906	55,819	55,279	59,915	62,919	65,849
Haddock	12,967	12,470	9,466	12,466	15,926	30,150	35,715	39,921	30,917	24,733
Rosefish	4,998	7,514	10,537	10,643	12,855	12,713	11,833	16,086	13,198	16,821
Flatfish	3,256	5,269	10,653	12,136	10,094	9,630	16,532	15,245	17,961	17,949
Other	530	1,494	1,664	2,408	2,063	2,027	2,095	2,324	3,688	6,853
Total	45,933	60,492	64,263	79,049	71,844	110,339	121,454	133,491	128,683	132,205

TABLE 2. CANADIAN EAST COAST PRODUCTION OF FRESH AND FROZEN FILLETS
AND BLOCKS, BY SPECIES, 1949 TO 1958 (Cont'd.)

(Thousands of Pounds)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
<u>Fresh</u>										
Cod	10,507	12,511	14,919	12,082	11,766	9,564	9,854	11,692	10,827	9,397
Haddock	7,463	7,564	8,873	6,960	7,448	7,121	7,855	8,287	8,347	7,390
Rosefish	"	"	"	"	72	72	33	31	39	13
Flatfish	579	1,100	2,049	1,898	3,062	2,003	2,901	1,513	2,364	1,625
Other	522	1,412	1,819	2,137	1,567	1,666	1,551	1,544	951	1,521
Total	19,071	22,587	27,660	23,077	23,915	20,426	22,194	23,067	22,528	19,946

for fish stick production.

The landed weight equivalent of Canadian east coast cod fillet production (fillet weight multiplied by three) represents 34% of total cod landings (Table 1 above) for the years 1956 and 1957, and 43% of those for 1958. More than one-third of cod landings, therefore, is currently processed into fresh and frozen fillets and blocks.

The chief by-product of filleting plants is fish meal, a high-protein supplement for livestock and poultry feeds. When the fillets are removed from the fish, about two-thirds of the landed weight remains and this offal is reduced to fish meal by grinding, cooking and drying processes, about five tons of offal being required to produce a ton of meal.

The value of the offal to the meal plant is difficult to determine; filleting plants sell the offal at various prices - frequently about \$7 or \$8 a ton, or sometimes at a nominal charge of only \$2 or \$3 a ton if the meal plant is part of the same establishment. One instance is recorded of a meal plant paying \$13.50 a ton to its major supplier. Fishermen usually receive $\frac{1}{4}\phi$ or $\frac{1}{2}\phi$ a pound for spoiled fish that has to be consigned to the meal plant (i.e., \$5 to \$10 a ton). An assumed average price of \$7.50 a ton would represent a raw material cost of about \$38 per ton of meal, which is less than one-third of the f.o.b. price - around \$125 a ton - received for meal by the plant. (The price is based on the protein content, which is usually 60% to 65% - 60 to 65 units at a current price of about \$2 per unit for "whitefish" meal.)

Because the offal from most plants is directed into fish meal production, this joint product is an important factor in the economics of fish filleting and should be taken into account in the measuring of the price spread. An offal value of \$7.50 a ton would represent a reduction of three-quarters of a cent in the raw material cost of a pound of cod fillets - the value of the two pounds of waste per pound of fillets.

Fish sticks were introduced about eight years ago in the United States and production grew rapidly to a level of more than 50 million pounds a year in recent years. Canadian production began a little later and is currently about one-tenth that of the United States. The statistics are as follows:

TABLE 3. CANADIAN FISH STICK PRODUCTION, 1954 TO 1958a

(Thousands of Pounds)

	1954	1955	1956	1957	1958
Cooked	-	4,046	3,912	3,838	4,740
Uncooked	-	1,144	498	1,578	1,544
Total	1,880	5,190	4,410	5,416	6,284

a Economics Service, Department of Fisheries of Canada.

The fish stick trade grew by a displacement of ordinary fillets and other varieties, rather than by a net increase in the consumption of fish. A considerable part of the final product weight consists of breading materials and the oil absorbed in cooking. The frozen blocks are cut by multiple band saws into sticks of the required size, and these are breaded, cooked in oil, packaged, and refrozen - or breaded, packaged and frozen without cooking. During the last quarter of 1958, the Toronto wholesale price of cod fish sticks was quoted at \$3.70 per dozen eight-ounce packages. This represented, accordingly, a price of about 62¢ a pound in comparison with frozen cod fillets (cello 5's) quoted around 29¢ and 30¢ a pound in the same period.

The scale of fillet output is dictated by the seasonal fluctuations in fish landings. Fresh fillet output may be regulated for the plant also producing frozen fillets, in accordance with the market situation; presumably the fillets may be frozen if that use promises the better returns. Peak supplies in the summer usually mean lower market prices; part of the economics of freezing fillets is related to taking advantage of higher prices in the winter period of reduced supply, because frozen fillets can be held in storage until that time.

The larger plants may fillet 50 million pounds of raw fish in a year; the smallest fresh fillet operations may involve only packing and shipping a few thousand pounds of fillets a year, purchased as fillets from fishermen. The most efficient size of plant is related to the volume and regularity of raw material supplies and the availability of labour. Fresh filleting does not require very heavy capital investment, but even the smaller freezing operations require a considerable scale of output to achieve the maximum economies in indirect processing costs per unit of output.¹ The large firm may also secure considerable advantages in marketing. The upper limit of economic size would be determined by the difficulties of management and co-ordination of plant operations, as well as by the limitations of labour and raw material supplies. For this reason, company expansion might take the form of branch plants and subsidiary operations - vertical or horizontal integration, or both.

5. Distribution to Retail

Brokers and commission agents operate as independent buyers and/or as agents for one or more processors. Brokerage fees or commissions range from 2½% to 12% of sale value, differing according to location, the volume and regularity of supply, dependability of the supplier, and so on. Brokers' services are of use to the wholesaler in maintaining a continuing supply of fish in the varieties and volume required.

Wholesale outlets may be regular fish wholesale houses, specialty fish wholesale-retail stores, or "frosted foods" wholesalers

¹ Perhaps an output of five million pounds or more a year (15 million pounds "capacity" in landed weight), according to Mr. H. Connor's evidence at the Halifax hearings of the Commission. See Proceedings, Vol. 13, p. 2066.

providing quick-frozen packaged fish items along with their other lines of frozen fruits and vegetables and juices. Meat wholesalers may carry fish as a side line or as a service to customers.

The wholesale markup is difficult to document in the absence of reliable prices f.o.b. plant. The published mid-month wholesale prices¹ for Halifax, Montreal, Toronto, Winnipeg and Vancouver, perhaps tend to be on the high side. The price for each city is computed as an average of quotations from several wholesale firms in the particular city, and no allowance is made for the scale or variety of discounts that may be offered on the published prices of the firms.

As one approximation, the f.o.b. plant value may be taken as 15¢ a pound for fresh cod fillets, based on a raw material cost of 9¢ (3¢ on landed weight to the fisherman), and a processor's margin of 6¢. Less-than-carload express to Toronto would add about 4¢ a pound, and brokerage at 7% about $1\frac{1}{2}$ ¢, making a total cost to the wholesaler of $20\frac{1}{2}$ ¢. The wholesale price on fresh cod fillets in Toronto in October, 1957, was 30.7¢. The wholesaler's margin on the basis of these figures would be about 10¢ a pound, or 33% on his selling price. For comparison, the Toronto retail margin on fresh cod fillets in October, 1957, was about 16¢, the average retail price being 46.8¢.

Processing costs would be somewhat higher on frozen fillets; addition of another cent for cost of freezing would bring the f.o.b. plant cost to 16¢. On the other hand, transportation costs might be cut in half, because frozen fillets could move in carload lots. Hence, the cost to the wholesaler in Toronto might be in the vicinity of 19¢ (allowing $1\frac{3}{4}$ ¢ for rail express and $1\frac{1}{4}$ ¢ for brokerage). On frozen cod fillets the Toronto wholesale price quotation for October, 1957, was 24.5¢ for cello 5's, and the retail price 29.7¢ for packaged fillets. The wholesaler's margin would be about $5\frac{1}{2}$ ¢, or 22% on his selling price, compared with a retailer's margin of 5¢ or 6¢.

These figures represent a "thin" processor's margin; moreover, it is probable that many would have higher costs, particularly those with comparatively new and undepreciated plants. Another approach to f.o.b. plant value can be made via company financial reports giving the breakdown of the sales dollar. In evidence before the Commission at Halifax on May 2, the sales dollar was divided, 53.3% for raw material (fish), 22.7% for wages and salaries, 22.4% for plant overhead and some variable costs including taxes, and 1.6% for distributed and undistributed profits.² Use of these figures and a raw material cost of 9¢ a pound for cod fillets results in an f.o.b. plant value of about 17¢ a pound, viz.:

1 In the Monthly Review of Canadian Fisheries Statistics, D.B.S.

2 Proceedings, Vol. 13, pp. 2030-31.

	<u>Per Cent of Sales Dollar</u>	<u>Cost per Pound in Cents</u>
Raw Material	53.3	9.0
Wages and Salaries	22.7	3.8
Overhead, etc.	22.4	3.8
Profits	<u>1.6</u>	<u>0.3</u>
	100.0	16.9

The addition of 3¢ for transportation and brokerage would bring the cost to the wholesaler in Toronto to about 20¢. The wholesaler's margin on frozen cod fillets in October, 1957, would have been 4½¢, or 22½% on cost, 18½% on his selling price, compared with a retail margin of 5¢.

Over the past five years, some 78% of the Canadian east coast production of fresh and frozen seafish fillets has been exported to the United States. For cod fillets and blocks, the proportion exported to the United States was 82%, and for haddock, 64%. Canada supplied 70% (102.8 million pounds) of the 146.6 million pounds of "groundfish" fillets and blocks imported by the United States in 1958. Included in the totals were 36.3 million pounds of Canadian cod fillets representing 75% of the 48.6 million pounds of cod fillets imported and 34.8 million pounds of blocks out of the total imports of 51.1 million pounds of frozen blocks of cod, haddock and other groundfish.¹

Cod fillets and blocks enter the United States under U.S. Tariff Paragraph 717 (b) "Fish, filleted, skinned, boned, sliced or divided, n.s.p.f.: ocean perch (rosefish), cod, haddock, hake, pollock and cusk", subject to a customs duty of 2½¢ a pound, or 1-7/8¢ a pound for a limited quota.² The quota in 1958 was 35,892,221 pounds, but there is no available information on the quantity of Canadian fillets and blocks that entered under the quota.

An additional impost on Canadian exports to the United States market is imposed by the current premium on Canadian funds in the exchange of United States dollar receipts. The buying rate on July 14, 1958, of 104-3/32 U.S. for the Canadian dollar would reduce by approximately one cent the returns on Canadian fillets sold at 24¢ U.S. in Boston.

1 United States Imports of Merchandise for Consumption, Calendar Year 1958, Report No. FT 110, U.S. Department of Commerce, Bureau of the Census.

2 The annual quota under which the lower customs duty rate is applicable is set at ... 15% of the average aggregate apparent annual consumption of such fish during the three calendar years preceding the year in which the imported fish are entered. Not more than one-quarter of the quota shall be admitted during the first three months of the year, one-half during the first six months or three-quarters during the first nine months. ("Apparent annual consumption" is computed without reference to changes in storage stocks.)

Frozen cod fillets from Canada were quoted at 21¢-23¢ for 5's in mid-October, 1957, sales by original receivers at Chicago, when the Toronto wholesale average was 24½¢ for cello 5's. The quotation on domestic 5's in Chicago was 22¢-24¢ on the same date - apparently a cent higher than the Canadian pack. The Boston quotation on domestic and Canadian 5's was 21¢-22¢. The one-pound pack was quoted 2¢ to 5¢ higher than the five-pound at different times in both Chicago and Boston, but sample wholesale price quotations indicate little difference between Canadian and domestic frozen cod fillets in the principal United States markets.¹ Canadian fillet plants package much of their output under the labels of their United States customers, affiliates or parent companies; consequently, such fish would be to all intents and purposes the same as domestic fish in United States marketing channels.

While frozen cod fillets from Canada, therefore, may sell only a cent or two below the prices of New England fillets in the United States, the situation is different for fresh cod fillets, as shown by the following sample quotations from the New York Daily Fisheries Report (sales by original receivers at New York in wholesale quantities):

Cod Fillets Fresh

(Prices in Cents per Pound)

<u>Date</u>	<u>Domestic</u>	<u>Canada</u>
October 15, 1957	42 - 45	25 - 26
May 13, 1958	38 - 40	28 - 30
June 17, 1958	40 - 42	28

Occasionally, low quotations represent discounts on lots held over from the previous day or days, or on low quality of other sorts, but the differential shown here has existed continuously for many years. The trade explanation - one explanation, at least - is that fillets are counted as fresh from the knife, consequently, fillets cut in Boston or New York are "fresher" than Nova Scotia fillets, even if cut from fish that were 10 days on the boat. Of course, the domestic fillets came from high-priced landings, compared with Halifax landings of cod at 3¢ or 3¼¢. Prices at Boston (ex vessel for first sales) were, for example:

<u>Date</u>	<u>Large Cod</u>	<u>Medium Cod</u>	<u>Scrod</u>
(dollars per 100 lbs.)			
May 12, 1958	14.00	12.00	-
June 16, 1958	11.60	9.75	9.00
June 30, 1958	6.50	7.60	6.55-6.60

At these prices, most New England cod must be sold in the fresh market and could not be sold, moreover, at the price for Canadian

¹ See Daily Fishery Reports (from Boston, New York, or Chicago), Market News Service, Bureau of Commercial Fisheries, U.S. Department of the Interior.

fresh cod fillets. It is not known to what extent the market differentiation between domestic and Canadian fillets prevails at the retail level. The United States consumer, probably, seldom knows if she is buying a Canadian or a New England product.

Cod prices at all levels have reflected the relative amplitude and accessibility of Atlantic cod stocks in comparison with other groundfish species, as well as a considerable degree of consumer preference for the other species. The trade frequently requests a proportion of haddock, rosefish and flatfish fillets along with cod fillets in placing orders, and this puts at a disadvantage those filleting plants forced to rely principally upon cod. Over the past decade, much of the growth in Canadian filleting capacity has been in regions such as Newfoundland and the Gulf of St. Lawrence where cod is the major catch. Furthermore, frozen cod fillets from Canada have had to compete on the United States market with heavy import entries of cod fillets and blocks from Iceland, Norway, Denmark and West Germany.

6. Domestic Consumption: Retail Distribution and Restaurants and Institutions

Fresh cod fillets are sold by weight from the display case or box, but the greater part of frozen cod fillets are retailed in the one-pound consumer pack from refrigerator counters in chain and independent retail outlets. The five-pound cellophane pack is mainly for hotels and restaurants, hospitals and other institutions, which buy wholesale and in quantity. As we have suggested in previous discussion, many retail stores no longer handle fresh fish and now sell only frozen items through frozen food cabinets.

Domestic disappearance of fresh and frozen cod fillets (annual production less exports, with allowance for changes in stocks) amounts to less than one pound per head of population per year. The annual estimates are as follows:

TABLE 4. DOMESTIC DISAPPEARANCE OF FRESH AND FROZEN
COD FILLETS AND BLOCKS, 1950 TO 1958

Year	Thousands of Pounds	Pounds per Capita
1950	16,115	1.17
1951	12,761	0.91
1952	15,474	1.07
1953	12,729	0.86
1954	14,303	0.94
1955	11,052	0.71
1956	14,915	0.93
1957	11,621	0.70
1958	11,584	0.68

For comparison, the Canadian per capita consumption of fisheries products in 1957 was 13.5 pounds (edible weight), of which 6.9 pounds was fresh and frozen shellfish, including 2.7 pounds of fillets. These per capita consumption figures have not varied greatly in recent years. Cod fillets, therefore, comprised one-third (or less) of the average consumption of fillets.

7. Measurement of the Price Spread

The available cod price statistics for the 10-year period 1949-1958 are somewhat less than satisfactory. Official retail price quotations were given on "fresh and frozen" cod fillets until the end of 1954, when a series of monthly quotations on fresh cod fillets began. Retail price quotations on "frozen packaged" cod fillets for Toronto are available from 1952, but these are not closely comparable with the wholesale price quotations, which are for "cello 5's".¹ However, unweighted averages of the Toronto monthly wholesale and retail quotations are used as year-averages in Table 5 for the purpose of measuring the Toronto wholesale-to-retail spread. Inasmuch as wholesale quotations for cello 5's may have been a few cents lower than those for the packaged fillets to which the retail series applies, the wholesale-retail spread may be exaggerated by the data in the table.

Computation of a fisherman-to-retail price spread faces even greater difficulties. The great differences among the provinces in the annual average landed values of cod are apparent in Table 1. The monthly weighted average values of landings show even more marked differences, resulting from varying seasonal price changes from one province to another. Beyond this, even regional and seasonal price spread measurements would be subject to inaccuracies because of the necessity to use imputed average landed values for finished and semi-processed products such as dried salted cod and saltbulk produced and sold by the fishermen themselves. Such products are arbitrarily converted to a raw fish equivalent, to which the alternative opportunity price, that prevailing for head-on gutted fish, is applied. Landed cod values are, therefore, somewhat theoretical in areas in which fishermen market some part of their catch in other than the dressed head-on form.

To compute a price spread for cod fillets, it was necessary first to recognize that fresh and frozen fillets are different products, to be considered separately, and to select a larger market centre, Toronto, for which reasonably complete wholesale and retail price series for each product are available. As the basis for the computation of the fishermen-retail price spread in Table 5, landed cod prices at Halifax²

1 Mid-month average wholesale prices and first-of-month average retail prices for various cities, collected and published by the Dominion Bureau of Statistics in the Monthly Review of Canadian Fisheries Statistics.

2 Landed fish prices are collected by the area offices of the federal Department of Fisheries and published by the Dominion Bureau of Statistics.

TABLE 5. SUMMARY OF FISHERMAN-RETAIL SPREAD, FRESH AND FROZEN
COD FILLETS, 1952 TO 1958

Year	Average Landed						
	Retail		Price of		Fisherman -Retail Spread	Retailer's Share of Retail Value	Fisherman's Share of Retail Value
	Average Retail Price at Toronto (¢/lb.) (1)	Equivalent Value per lb. of Market Cod Landed Weight (¢) (2)	Average Wholesale Price at Toronto (¢/lb.) (3)	Market Cod at Halifax Less Value of Offal (¢/lb.) (4)			
A. Frozen Packaged Cod Fillets, 1952-1958							
1952	38.6	12.9	30.4	3.5	9.4	21	27
1953	34.8	11.6	27.0	3.0	8.6	22	26
1954	33.5	11.2	25.6	3.2	8.0	24	30
1955	30.8	10.3	24.4	3.0	7.3	21	29
1956	29.8	9.9	24.8	3.2	6.7	17	32
1957	30.2	10.1	24.9	3.0	7.1	18	30
1958	31.4	10.5	27.9	3.0	7.5	11	29

Column (1): The year average is an unweighted average of monthly quotations in D.B.S., Monthly Review of Canadian Fisheries Statistics.

Column (2): Retail price (Column (1)) divided by 3.

Column (3): The D.B.S. wholesale series until July, 1954, is headed "Cod fillets, frozen, packaged", and after that date "Cello 5's". A different series entitled "Cod fillets, frozen, not packaged" was used for 1952 and 1953 in preparing Table 69 (p. 261) of Volume II of this Report, consequently the wholesale average price figures for those two years are different in Table 69.

TABLE 5. SUMMARY OF FISHERMAN-RETAIL SPREAD, FRESH AND FROZEN
COD FILLETS, 1952 TO 1958 (Cont'd.)

Year	Retail		Average Landed		Fisherman -Retail Spread (¢) (5)	Retailer's Share of Retail Value (%) (6)	Fisherman's Share of Retail Value (%) (7)
	Average Retail Price at Toronto (¢/lb.) (1)	Equivalent Value per lb. of Market Cod Landed Weight (¢) (2)	Average Wholesale Price at Toronto (¢/lb.) (3)	Price of Market Cod at Halifax Less Value of Offal (¢/lb.) (4)			
B. Fresh Unwrapped Cod Fillets, 1955-1958							
1955	44.8	14.9	28.2	3.0	11.9	37	20
1956	44.9	15.0	29.2	3.2	11.8	35	21
1957	45.5	15.2	30.3	3.0	12.2	33	20
1958	51.4	17.1	33.4	3.0	14.1	35	18

B. Fresh Unwrapped Cod Fillets, 1955-1958

Column (4): One-quarter of a cent is deducted, as the value of offal for fish meal production.

Column (5): Column (2) minus Column (4).

Column (6): The difference between wholesale and retail price (Column (1) minus Column (3)) as a percentage of retail price (Column (1)).

Column (7): Landed price (Column (4)) as a percentage of equivalent retail value (Column (2)).

were used because these are representative of raw cod prices at Halifax and Lunenburg, where the greater part of the catch is processed by filleting plants, and which are, moreover, major suppliers of the Canadian fresh and frozen fillet market. An approximate average of the winter and summer season prices for market cod at Halifax is used, reduced by one-quarter of a cent as representative of the value of offal for fish meal production. So computed, the raw material cost of cod used in filleting is exaggerated to the extent that some scrod is filleted, for which a lower price is paid to the fisherman.¹ The landed price paid by many filleting plants is lower, of course, than that at Halifax.

The retail price of fresh cod fillets at Toronto was about 50% higher than that of frozen cod fillets during the years 1955 to 1958. The raw material cost at Halifax was the same for fresh and frozen fillets, consequently the fisherman's price represented a higher proportion of the retail value of frozen fillets -- about 30%, compared with 20% in the case of fresh fillets. The retailer's markup was about 35% of the retail value on fresh cod fillets, reflecting in part, of course, the risk of loss through spoilage. The retail markup was about half as great on frozen cod fillets and has apparently been declining over the past five or six years.

1 As a compensating factor, the labour cost in filleting small fish would be higher, per pound of fillets. The recovery rate may not be much different between larger and smaller fish.

APPENDIX TABLE A1
MONTHLY LANDINGS OF ATLANTIC COD, CANADIAN EAST COAST, 1949 TO 1958^a
(Landed Weight in Thousands of Pounds)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Jan.	6,108	5,283	7,692	7,717	13,052	14,070	10,890	10,501	6,483	12,817
Feb.	3,697	3,368	6,834	7,411	10,283	14,284	11,546	9,119	6,296	10,454
Mar.	7,783	10,161	8,147	11,584	9,556	15,294	13,376	14,352	14,269	13,571
Apr.	12,277	14,579	14,373	20,528	16,490	18,670	21,805	21,183	14,752	20,351
May	19,601	21,608	20,269	17,031	18,520	20,389	24,135	28,443	28,868	31,304
June	43,545	33,184	36,535	33,556	63,551	76,591	67,439	92,128	64,752	111,498
July	49,120	46,762	37,116	51,496	193,928	221,221	183,165	198,516	200,098	152,948
Aug.	33,302	40,238	28,423	25,979	90,212	126,872	117,226	120,686	167,548	80,746
Sept.	29,531	26,686	27,383	29,558	55,701	82,770	66,794	66,122	68,903	45,625
Oct.	16,882	12,463	14,305	11,459	26,338	31,541	37,311	41,875	44,341	26,053
Nov.	9,456	11,560	8,380	8,112	17,312	18,012	22,000	14,879	18,037	13,519
Dec.	9,287	7,030	7,764	8,179	9,320	12,221	7,156	12,145	7,692	5,422

^a Newfoundland landings are not included for the years 1949 to 1952, inclusive.

Source: D.B.S., Monthly Review of Canadian Fisheries Statistics. Data for 1958 are preliminary.

APPENDIX TABLE A2
MONTHLY LANDINGS OF ATLANTIC COD, NOVA SCOTIA, 1949 TO 1958

(Landed Weight in Thousands of Pounds)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Jan.	6,094	5,246	7,623	7,662	9,340	10,624	7,403	8,164	5,873	9,752
Feb.	3,679	3,329	6,768	7,279	6,273	9,442	7,887	6,955	2,726	8,371
Mar.	7,726	10,119	8,095	11,532	5,399	9,391	8,703	9,772	8,345	8,293
Apr.	12,080	14,385	14,168	20,471	11,836	12,847	14,376	14,111	9,304	13,548
May	14,859	18,614	16,882	14,739	9,498	11,096	12,667	14,583	15,853	12,424
June	25,247	19,186	17,966	17,866	11,444	10,849	13,545	11,886	13,962	8,374
July	25,395	21,666	21,271	23,185	17,418	14,612	15,416	15,306	13,867	11,457
Aug.	9,309	15,196	9,700	9,922	6,634	7,664	8,452	9,358	9,423	9,026
Sept.	15,926	13,064	15,878	16,656	16,244	16,488	12,771	10,467	12,295	8,920
Oct.	10,460	7,500	9,100	6,157	6,972	7,180	8,828	9,324	8,597	7,418
Nov.	7,878	9,942	7,175	6,674	8,056	9,959	13,382	5,922	9,914	8,524
Dec.	8,963	6,863	7,633	7,986	6,474	9,172	6,043	9,625	4,922	4,442

Source: D.B.S., Monthly Review of Canadian Fisheries Statistics. Data for 1958 are preliminary.

APPENDIX TABLE A3
MONTHLY LANDINGS OF ATLANTIC COD, NEW BRUNSWICK, 1949 TO 1958
(Landed Weight in Thousands of Pounds)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Jan.	14	37	69	55	111	56	62	60	26	15
Feb.	18	39	66	132	63	64	50	70	16	3
Mar.	57	42	53	52	41	80	62	26	11	25
Apr.	197	194	99	57	123	129	114	32	31	12
May	275	705	605	596	471	567	1,483	1,194	1,241	1,159
June	4,464	3,498	5,112	5,148	3,464	2,878	4,646	5,164	5,324	6,848
July	7,703	7,350	5,382	6,955	5,389	4,039	4,086	6,713	9,355	9,011
Aug.	6,680	6,160	5,854	5,514	3,696	4,970	5,796	10,424	9,102	8,972
Sept.	3,921	3,598	3,970	3,395	2,591	7,516	5,062	6,496	6,991	6,804
Oct.	2,099	1,469	2,118	1,832	2,888	4,372	4,843	6,692	5,275	4,443
Nov.	639	858	538	456	503	596	3,160	2,018	1,360	1,717
Dec.	47	71	76	73	77	53	91	68	81	132

Source: D.B.S., Monthly Review of Canadian Fisheries Statistics. Data for 1958 are preliminary.

APPENDIX TABLE A4
MONTHLY LANDINGS OF ATLANTIC COD, QUEBEC, 1949 TO 1958
(Landed Weight in Thousands of Pounds)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Jan.	-	-	-	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-	-	-	-
Mar.	-	-	-	-	-	-	-	-	-	-
Apr.	-	-	106	-	8	8	11	34	-	29
May	3,884	2,142	2,434	1,543	2,458	1,674	2,625	5,023	3,165	7,002
June	12,665	9,692	12,592	9,932	7,462	8,726	6,962	12,982	15,827	16,685
July	13,987	16,460	9,140	20,401	13,519	5,934	8,464	15,375	19,655	18,999
Aug.	16,113	17,624	11,985	9,550	10,399	5,261	10,102	15,435	20,156	11,527
Sept.	8,882	9,403	7,030	9,062	5,822	7,676	7,055	12,559	12,205	7,908
Oct.	4,125	3,327	2,898	3,286	3,540	2,463	4,780	7,618	7,028	3,874
Nov.	850	705	578	889	1,444	484	1,299	1,271	1,129	711
Dec.	249	94	43	103	140	21	26	22	7	1

Source: D.B.S., Monthly Review of Canadian Fisheries Statistics. Data for 1958 are preliminary.

APPENDIX TABLE A5
MONTHLY LANDINGS OF ATLANTIC COD, PRINCE EDWARD ISLAND, 1949 TO 1958
(Landed Weight in Thousands of Pounds)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Jan.	-	-	-	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-	-	-	-
Mar.	-	-	-	-	-	-	-	-	-	-
Apr.	-	-	-	-	-	-	5	-	-	219
May	583	147	348	153	416	413	668	853	575	361
June	1,169	808	865	610	501	575	420	652	1,176	1,516
July	2,035	1,286	1,323	955	667	1,120	1,832	2,353	1,223	1,438
Aug.	1,200	1,258	884	993	683	1,004	1,890	2,563	3,752	2,943
Sept.	802	620	505	445	400	947	900	1,512	718	803
Oct.	198	167	189	184	196	428	240	345	76	342
Nov.	89	55	89	93	167	138	56	145	32	106
Dec.	28	2	12	17	30	75	52	103	74	21

Source: D.B.S., Monthly Review of Canadian Fisheries Statistics. Data for 1958 are preliminary.

APPENDIX TABLE A6

MONTHLY LANDINGS OF ATLANTIC COD, NEWFOUNDLAND, 1953 TO 1958

(Landed Weight in Thousands of Pounds)

	1953	1954	1955	1956	1957	1958
Jan.	3,469	3,390	3,434	2,277	584	3,050
Feb.	3,947	4,778	3,609	2,094	3,554	2,080
Mar.	4,116	5,823	4,611	4,554	5,913	5,253
Apr.	4,523	5,686	7,299	7,007	5,417	6,543
May	5,677	6,639	6,692	6,790	8,034	10,358
June	40,680	53,563	41,866	61,444	28,463	78,075
July	156,935	195,516	153,367	158,770	155,998	112,043
Aug.	68,800	107,973	90,986	82,906	125,115	48,278
Sept.	30,644	50,143	41,006	35,088	36,694	24,176
Oct.	12,742	17,098	18,620	17,896	23,592	11,869
Nov.	7,142	6,835	4,103	5,522	5,602	2,496
Dec.	2,599	2,900	944	2,328	2,608	826

Source: D.B.S., Monthly Review of Canadian Fisheries Statistics. Data for 1958 are preliminary.

HADDOCK FILLETS

1. The Raw Material

Haddock (*Melanogrammus aeglefinus*) usually frequent warmer water than codfish, and are found from the Grand Bank and southern Newfoundland to Cape Cod. Stocks in the Gulf of St. Lawrence are comparatively small, hence the haddock catch is small in Quebec, northern New Brunswick and Prince Edward Island.¹ The growth of the fish is slow, particularly in northern waters, and the current heavy rate of exploitation is expected to reduce the total stocks and eventually the annual catch. The Canadian average annual catch during the past five years has been about 129 million pounds. This, along with an annual catch by other nations of about 100 million pounds in North American waters, represents nearly one-half of the estimated stocks - a very high rate of utilization.²

Haddock fishing and processing is subject to the same seasonal and technical factors as in the case of cod. Most of the catch is taken with drag nets. The production pattern is one of summer peaks and winter lows, while the price pattern is the opposite. Haddock are of smaller average size than cod, consequently the labour cost of filleting is usually somewhat higher per pound of fillets. Automatic filleting machinery, however, has made it economic to fillet very small haddock (sometimes termed "ping-pongs"), often in the round just as they come from the water, for the production of frozen blocks or slabs for fish sticks.

The flesh of haddock is so much like that of cod that many American buyers prefer to have the skin left on the fillet as a means to be sure that it is haddock. The yield of fillets from the head-on dressed weight of haddock as landed is perhaps two percentage points higher than that on cod, and above 40% if the skin is left on the fillets. However, in some recent years landings have included a large proportion of very small haddock, which would have lowered the average recovery rate - particularly taking into account the "ping-pongs" landed in the round. An average recovery rate of 35% is arbitrarily chosen for the purposes of this study.

2. Disposition of the Catch

The quantity and value figures for annual landings of haddock in the Atlantic coast provinces over the past decade are shown in Table

1 Of course, little fishing takes place in the Gulf in winter months.

2 Compare with the groundfish utilization table in The Commercial Fisheries of Canada, p. 13, Royal Commission on Canada's Economic Prospects, 1956.

1. The greater part of the catch is marketed as fresh or frozen fillets and blocks - the latter eventually as fish sticks or portions. Some is sold in the fresh and frozen dressed forms and a small amount of smoked dressed haddock is produced - the true "finnan haddie". The residue from filleting, or offal, like that of other groundfish, is ground and dried into "whitefish" meal, a high-protein feed supplement.

Canadian landings of haddock averaged 128.8 million pounds a year for the five years 1954 to 1958, inclusive. Fresh and frozen haddock fillet production averaged 40.1 million pounds during the same period.¹ Assuming a recovery rate of 35%, fillet and block production would account for landings of about 115 million pounds a year. For the Maritimes, smoked dressed haddock production might take more than a million pounds a year, and fresh and frozen dressed nine or 10 million pounds, landed weight.² The utilization figures for Newfoundland are not known, and the Quebec catch of haddock was of minor importance in the total.

About two-thirds of the total Canadian production of fresh and frozen haddock fillets and blocks in recent years was exported to the United States. The proportion of fresh haddock fillets retained in Canada, however, was quite high - about 85% for the five years 1954 to 1958, compared with 25% of the production of frozen fillets and blocks. The domestic disappearance of haddock fillets and blocks has, in fact, doubled during the past decade, and the apparent consumption per head of population is now around nine-tenths of a pound per year. Annual figures for production, changes in stocks, exports and (the residual) domestic disappearance are presented in Table 2.

3. Conditions of Production and Sale by Fishermen

Haddock, like cod, are gutted on the deck of the trawler or dragger and then stowed, packed with ice, in the pens below-decks.³ When landed, they are culled or graded according to size, usually in two price classifications - "haddock" or "large haddock" and "scrod". In July, 1957, for instance, the price paid in Lunenburg, Nova Scotia, was 5¢ a pound for haddock and 2½¢ for scrod haddock, while in Halifax, large haddock brought 4½¢, scrod 2½¢, and "shack haddock" 2¼¢. In the

1 The yearly figures appear in Table 2 of the cod study, and are included in Table 2 following.

2 The conversion figures used are: 170 lb. head-on gutted weight to 100 lb. smoked dressed; 130 lb. to 100 lb. fresh and frozen dressed.

3 As described in the study on cod, this is the most common form in which haddock are landed. Other forms in which the fish are landed or sold by fishermen range from the round to processed forms, but the major part of the catch is sold to filleting plants in the head-on gutted state.

TABLE 1. ANNUAL CANADIAN LANDINGS AND LANDED VALUES
OF HADDOCK, BY PROVINCES, 1949 TO 1958^a

Year	Canadian Atlantic Coast Total ^b	Newfoundland ^b	Prince Edward Island	Nova Scotia	New Brunswick	Quebec ^c
<u>A. Landed Weight in Thousands of Pounds</u>						
1949	46,580	-	76	45,404	1,100	-
1950	47,319	-	128	46,213	978	-
1951	55,990	-	299	53,355	2,332	4
1952	54,902	-	1,153	51,198	2,544	7
1953	72,969	14,489	2,329	52,794	3,345	12
1954	117,989	42,817	3,014	67,867	4,251	40
1955	135,573	51,597	1,787	78,389	3,351	449
1956	155,390	62,264	1,978	87,756	3,113	279
1957	131,638	44,007	1,662	83,764	2,055	150
1958	103,358	30,760	2,655	66,798	3,092	53
<u>B. Landed Value in Thousands of Dollars</u>						
1949	2,123.0	-	2.0	2,065.6	55.4	-
1950	2,365.6	-	6.3	2,294.0	65.3	-
1951	2,668.6	-	13.5	2,521.7	133.3	0.1
1952	2,722.6	-	53.1	2,524.0	145.3	0.2
1953	3,000.8	455.2	95.0	2,306.7	143.6	0.3
1954	4,243.5	1,189.7	142.3	2,729.8	180.7	1.0
1955	4,325.2	1,392.0	54.1	2,726.9	136.2	16.0
1956	4,861.9	1,649.8	70.9	2,999.0	134.3	7.9
1957	4,209.9	1,000.0	64.2	3,040.3	101.1	4.3
1958	4,091.0	713.0	118.0	3,068.0	190.0	3.0
<u>C. Average Value per Pound, Landed Weight, in Cents</u>						
1949	4.6	-	2.6	4.5	5.0	-
1950	5.0	-	4.9	5.0	6.7	-
1951	4.8	-	4.5	4.7	5.7	2.5
1952	5.0	-	4.6	4.9	5.7	2.9
1953	4.1	3.1	4.1	4.4	4.3	2.5
1954	4.4	2.8	4.7	4.0	4.3	2.5
1955	3.2	2.7	3.0	3.5	4.1	3.6
1956	3.1	2.6	3.6	3.4	4.3	2.8
1957	3.2	2.3	3.9	3.6	4.9	2.9
1958	4.0	2.3	4.4	4.6	6.1	4.7

a D.B.S., Fisheries Statistics of Canada. Preliminary figures for 1958 from the D.B.S., Monthly Review of Canadian Fisheries Statistics.

b Newfoundland landings not included until 1953.

c Quebec haddock landings included with other species in 1949 and 1950. Because of the rounding of the small annual quantity and value figures, the average value per pound for Quebec is not necessarily accurate to tenths of a cent.

TABLE 2. CANADIAN PRODUCTION, EXPORTS AND DOMESTIC DISAPPEARANCE OF FRESH AND FROZEN HADDOCK FILLETS AND BLOCKS, 1949 TO 1958^a

Year	Annual Production of Filletts and Blocks			Change in Frozen Stocks during Year		Amount Marketed ^b
	Fresh	Frozen	Total	Increase	Decrease	
	(millions of pounds)					
	(1)	(2)	(3)	(4)	(5)	(6)
1949	7.5	13.0	20.4	-	0.3	20.7
1950	7.6	12.5	20.0	0.1	-	19.9
1951	8.9	9.5	18.3	0.3	-	18.0
1952	7.0	12.5	19.5	0.7	-	18.8
1953	7.4	15.9	23.4	0.3	-	23.1
1954	7.1	30.2	37.3	3.9	-	33.4
1955	7.9	35.7	43.6	-	2.6	46.2
1956	8.3	39.9	48.2	0.1	-	48.1
1957	8.3	30.9	39.2	-	2.3	41.5
1958	7.4	24.7	32.1	0.4	-	31.7

Year	Exported				Domestic Disappearance ^c	
	Fresh	Frozen Filletts	Frozen Blocks	Total	Total	Per Person
	(millions of pounds)				(pounds)	
	(7)	(8)	(9)	(10)	(11)	(12)
1949	-	13.6	-	13.6	7.1	.53
1950	-	13.0	-	13.0	6.9	.50
1951	1.3	6.8	-	8.1	9.9	.71
1952	1.3	9.1	-	10.4	8.4	.58
1953	.9	12.3	-	13.2	9.9	.67
1954	.8	21.3	-	22.1	11.3	.74
1955	.9	17.5	13.0	31.4	14.8	.94
1956	1.8	18.1	11.0	30.9	17.2	1.07
1957	1.0	20.2	6.1	27.3	14.2	.86
1958	1.3	14.0	2.9	18.2	13.5	.79

a Production data from D.B.S., Canadian Fisheries Statistics and from Canadian Fisheries Annual, 1959, Gardenvale, P.Q., Appendix, Section Five. Stocks and export data from D.B.S., Monthly Review of Canadian Fisheries Statistics. 1958 data are preliminary.

b A decrease in stocks represents a flow into the market, hence "Amount Marketed" is the sum of production plus a decrease in stocks, or of production minus an increase in stocks.

c Domestic disappearance (Column (11)) is the amount marketed (Column (6)) less total exports (Column (10)). The total is divided by the Canadian population figure, June 1 of each year, as reported in the Canada Yearbook, to yield a per capita domestic disappearance figure.

same month at Glace Bay, Petit de Grat and Louisbourg, Nova Scotia, large haddock brought the fishermen 4¢ and scrod 2½¢; at North Sydney, "haddock" was 3½¢. Round haddock at Glace Bay were sold for 2¼¢, less 10% (being ungutted). Ungraded haddock at St. John's, Newfoundland, were quoted at 3¢ a pound.

Monthly weighted average prices of haddock landings in 1957 and 1958 are presented in Table 3. Prices were generally higher in 1958, which was a low production year for haddock. New Brunswick prices were higher in part because much of the New Brunswick catch is in the Bay of Fundy area, where it goes predominantly into the fresh fillet trade. The average values for some winter months are 1¢ to 2¢ higher than summer values in New Brunswick and Nova Scotia, reflecting the influence on price of relatively small winter landings. Winter prices for haddock in Halifax have been as high as 6¢ in late 1957 and 1958, 6¼¢ in 1952-53, and 6½¢ in 1950.

Some indication of the seasonal pattern of landings is given by the monthly landings and landed value figures in Table 4, from which the average values in Table 3 were derived.

4. Processing

A large proportion of the haddock catch is landed by draggers and trawlers. On this account the greater part of fresh haddock fillets is produced in plants which also produce frozen fillets. Filleting is carried out with the same equipment and personnel used in filleting the other groundfish species; in fact, it is common practice to change from haddock to cod or flatfish in the same day, according to the supply situation. Consequently, it is difficult to allocate indirect costs among the different species filleted. The direct labour cost of candling haddock fillets would be somewhat less than on runs of cod or plaice, because only a few candler-inspectors are needed; many of these may be put on the packaging line when the filleting line shifts to haddock. On the other hand, the filleters would have a lower production rate on haddock than on larger cod. Some estimates of plant operators place the labour-cost of filleting haddock about half-a-cent higher than that for cod: e.g., 4½¢ compared with 4¢ per fillet-pound. As suggested in previous discussion, the recovery rate is higher for haddock than cod: perhaps an average of 35% from all sizes for fillets and blocks combined, 38% in filleting large haddock, and 41% if the skin is left on the fillets.

Haddock fillets are packed for market like cod fillets: fresh fillets separated by parchment paper and packed in 20-pound boxes; frozen fillets for the most part in one-pound cartons, 48 to the master carton.

Haddock offal going into fish meal production would approximate two pounds for every pound of fillet-weight. A slightly higher recovery rate than one-third for haddock would mean a slightly lower

TABLE 3. MONTHLY WEIGHTED AVERAGE VALUES OF HADDOCK LANDINGS, FOR THE CANADIAN ATLANTIC COAST AND SELECTED PROVINCES, 1957 AND 1958a

(Average Value in Cents per Pound)

Month	Atlantic Coast		Nova Scotia		New Brunswick		Prince Edward Island		Newfoundland	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Jan.	3.2	4.6	3.6	5.2	b	b	-	-	2.5	2.3
Feb.	3.0	3.9	3.7	4.7	-	-	-	-	2.3	2.4
Mar.	3.1	3.8	3.8	4.6	-	-	-	-	2.3	2.4
Apr.	3.1	3.3	3.7	4.0	-	-	-	-	2.2	2.4
May	2.9	3.5	3.4	4.1	5.7	b	b	b	2.2	2.2
June	3.3	4.3	3.4	4.2	4.4	5.5	3.8	4.0	2.1	-
July	3.3	4.4	3.3	4.2	4.4	5.6	b	4.3	b	b
Aug.	3.3	4.5	3.2	4.6	b	5.9	3.7	4.0	b	b
Sept.	3.4	4.3	3.5	4.6	b	5.6	3.8	4.5	2.5	2.4
Oct.	3.5	3.7	3.6	4.8	b	6.1	b	5.0	2.0	2.2
Nov.	3.6	4.8	4.0	5.1	b	6.9	-	b	2.3	2.1
Dec.	4.1	4.5	4.8	5.5	b	10.4	b	b	2.3	2.1

a Computed from data in Table 4.

b The smallness of the totals when rounded prevents obtaining an average value figure within a significant range of accuracy.

TABLE 4. MONTHLY LANDINGS AND LANDED VALUES OF HADDOCK,
CANADIAN ATLANTIC COAST AND SELECTED PROVINCES,
1957 AND 1958^a.

Period	Canadian Atlantic Coast	Nova Scotia	New Brunswick	Prince Edward Island	Newfoundland
A. <u>Quantity in Thousands of Pounds</u>					
<u>1957</u>					
Jan.	11,195	6,006	48	-	5,141
Feb.	16,985	8,678	4	-	8,303
Mar.	17,106	9,142	-	-	7,964
Apr.	22,303	12,779	5	-	9,519
May	15,013	7,942	230	26	6,809
June	11,145	8,903	549	320	1,276
July	6,516	5,973	362	44	102
Aug.	7,826	6,894	198	602	132
Sept.	6,232	4,814	201	390	827
Oct.	5,399	4,455	187	166	591
Nov.	5,903	4,361	161	-	1,377
Dec.	5,434	3,660	108	113	1,553
<u>1958</u>					
Jan.	3,623	2,879	12	-	732
Feb.	14,703	9,424	4	-	5,275
Mar.	23,724	15,310	7	-	8,407
Apr.	12,779	7,406	1	8	5,364
May	7,168	4,487	140	30	2,489
June	4,915	4,231	421	248	9
July	4,067	3,185	550	254	76
Aug.	4,822	3,128	589	766	339
Sept.	5,887	3,681	463	712	1,031
Oct.	9,689	4,741	394	440	4,114
Nov.	5,886	4,496	347	165	855
Dec.	5,883	3,650	164	32	2,037

TABLE 4. MONTHLY LANDINGS AND LANDED VALUES OF HADDOCK,
CANADIAN ATLANTIC COAST AND SELECTED PROVINCES,
1957 AND 1958a (Cont'd.).

Period	Canadian Atlantic Coast	Nova Scotia	New Brunswick	Prince Edward Island	Newfoundland
B. <u>Value in Thousands of Dollars</u>					
<u>1957</u>					
Jan.	353	218	4	-	131
Feb.	517	323	b	-	194
Mar.	526	346	-	-	180
Apr.	682	471	b	-	211
May	435	270	13	1	151
June	371	305	24	12	27
July	215	195	16	2	1
Aug.	258	223	9	22	4
Sept.	215	170	9	15	21
Oct.	190	162	9	7	12
Nov.	215	174	9	-	32
Dec.	225	176	8	6	35
<u>1958</u>					
Jan.	168	150	1	-	17
Feb.	567	443	b	-	124
Mar.	901	700	b	-	201
Apr.	422	294	b	b	128
May	248	182	8	1	56
June	211	178	23	10	b
July	177	133	31	11	2
Aug.	216	144	35	31	6
Sept.	253	170	26	32	25
Oct.	362	226	24	22	90
Nov.	283	231	24	9	18
Dec.	262	200	17	2	43

a Data from D.B.S., Monthly Review of Canadian Fisheries Statistics.

b Less than one-half of the specified unit.

proportion of offal than in the case of codfish, but the difference is not great enough to warrant changing from the $\frac{3}{4}$ -cent allowance off the raw material cost per pound that was used for cod fillets, based on an offal value of \$7.50 a ton.

5. Distribution: Processor to Retail

The marketing chain is that described for cod fillets: from processor to commission agent or broker to wholesaler to retailer, restaurant or hospital. The wholesaler or retailer may buy directly from the processor.

Canadian official wholesale and retail price quotations are available only for fresh unwrapped haddock fillets. Taking October, 1957, quotations for Toronto as an example, the wholesale price was 40¢ and the retail price 60¢. At that time the fishermen received 5¢ a pound for haddock on the wharf at Halifax; the raw material cost of fillets was, therefore, in the neighbourhood of 15¢ a pound, less three-quarters of a cent for the offal - say 14¢. Processing costs of, say, 6¢ would bring the f.o.b. plant price to 20¢ and the Toronto wholesaler's cost to about 25¢ after allowing for transportation and brokerage. In this case, his markup would be 15¢, or $37\frac{1}{2}\%$ on his selling price.

The average value at plant of the production of fresh haddock fillets in Maritime plants as reported to the Dominion Bureau of Statistics, was about 26¢ for 1955 and 1956 - considerably above the f.o.b. plant value of 20¢ used in this illustration.

The average Maritime plant value of frozen haddock fillets, from plant reports, was $23\frac{1}{2}\%$ a pound for 1954, $22\frac{1}{2}\%$ for 1955, and $18\frac{1}{2}\%$ for 1956. The 1956 reported plant values per pound can be compared with the wholesale price quotations in Table 5.

Taking the f.o.b. plant value of frozen haddock fillets to be the same as that of the fresh fillets, 20¢, the Toronto wholesaler's cost might be about $22\frac{1}{2}\%$, carload express and brokerage paid, and his markup about 10¢, or 31% on a selling price of 32¢.

6. Retailing

The section of the study on cod fillets, describing the retail marketing system, is applicable also to haddock fillets. The problem of a relatively small volume of product in the domestic distribution system is illustrated by the domestic disappearance figures in Table 2. It is apparent, however, that the Canadian consumption of haddock fillets has been increasing during the past 10 years, while cod fillets have been losing ground.

TABLE 5. WHOLESALE PRICES, FROZEN HADDOCK FILLETS

(Cents per Pound)

	October 1956	October 1957	April 1958
<u>Boston</u> (Canadian and Domestic Fillets)			
Skin-off, 1 lb.	-	30-33	36-38
5 lb.	26-28	28-31	33-35
Skin-on, 1 lb.	-	27-30	34-36
5 lb.	23-25	25-28	31-33
<u>Toronto</u> (White's Fish Co.)			
		(April, 1957)	
Skinless, 1-lb. tray	-	-	38
5-lb. cello	32	32	37

7. Measurement of the Price Spread

The data are presented in Table 6. The raw material cost is an unweighted rough average for the year, calculated by inspection from the monthly landed prices for large haddock at Halifax, and adjusted to allow for an offal value of \$7.50 a ton (one-quarter of a cent a pound off the raw material cost). The (unweighted) average wholesale and retail prices of fresh haddock fillets at Toronto were divided by the factor 2.86 to obtain the wholesale and retail values equivalent to a pound of haddock, head-on gutted weight.¹

The Halifax fishermen's share of the consumer dollar paid for fresh haddock fillets in Toronto was highest in 1950. In that year, the landed price was 6¢ during most of the summer and 6½¢ in late fall and winter months. The fishermen's share was lowest in 1955, when the landed price of haddock remained at 4¢ from May to October, and was 5¢ in the other months, while Toronto retail prices were 5¢ to 12¢ above those for corresponding months in 1950. For the past six years the fishermen's share has not varied far from 22%.

On frozen haddock fillets, the fishermen's share of the retail dollar is somewhat larger, because the retail price is lower. A complete series of retail prices is not available to us, but taking,

¹ A recovery rate of 35% is equivalent to a recovery of one pound of fillets from 2.86 pounds of haddock as landed.

TABLE 6. FISHERMAN-RETAIL SPREAD ON FRESH UNWRAPPED HADDOCK FILLETS, BASIS HALIFAX LANDED PRICES AND TORONTO RETAIL PRICES, 1950 TO 1958^a

Year	Average Retail Price at Toronto (¢/lb.) (1)	Retail		Toronto		Raw Material		Fisherman -Retail Spread (¢) (5)	Retailer's Share of Retail Value (%) (6)	Fishermen's Share of Retail Value (%) (7)
		Equivalent Value per lb. of Haddock Landed Weight (¢) (2)	Wholesale Value per lb. Landed Weight (¢) (3)	Cost of Filletts per lb. Landed Weight (¢) (4)						
1950	49.3	17.3	12.3	6.0	11.3	29	35			
1951	55.6	19.5	14.2	5.5	14.0	27	28			
1952	60.6	21.2	14.6	5.5	15.7	31	26			
1953	58.8	20.6	13.7	4.8	15.8	34	23			
1954	59.1	20.7	13.9	4.8	15.9	33	23			
1955	57.9	20.3	12.9	4.3	16.0	36	21			
1956	59.7	20.9	13.6	5.0	15.9	35	24			
1957	61.1	21.4	13.9	4.8	16.6	35	22			
1958	67.8	23.7	15.6	5.3	18.4	34	22			

^a Halifax landed prices reported by the Department of Fisheries were used for computation of the raw material cost, and the annual wholesale and retail prices used were unweighted averages of the monthly quotations in the D.B.S., Monthly Review of Canadian Fisheries Statistics. A recovery rate of 35% (100 lb. of filletts from 286 lb. of haddock as landed) was assumed in calculating the wholesale and retail equivalent values per pound of haddock, landed weight. Average landed price per pound (raw material cost) was reduced by one-quarter of a cent to allow for the value of offal.

for example, a retail quotation of 41¢ a pound at Toronto in April, 1958, the spread on a raw material cost of 17¢ for the previous month¹ was 24¢, and the fishermen's share of the consumer dollar was about 41%.

¹ The landed price in Halifax was 6¢ for haddock in March, 1958. It was 5¢ in April.

WHITEFISH FILLETS AND DRESSED WHITEFISH

1. The Raw Material

The common or lake whitefish (*Coregonus clupeaformis*) is related to the salmon and trout families, and is one of several varieties of whitefish, but the only one of commercial importance in Canadian fisheries. The mature whitefish averages 18 inches in length and $2\frac{1}{2}$ to three pounds in weight, although larger ones are not uncommon. Maturity is reached in three or four years, but may take as much as eight years in cold water lakes, such as Great Slave Lake. Whitefish frequent the colder, deep water in the summertime, moving into shallower water in the spawning season, which begins usually in October and continues until as late as January in the colder lakes.

It is not known to what extent the ravages of the sea lamprey have reduced the numbers of whitefish in the Great Lakes; the Ontario catch has fallen off in recent years, but whitefish stocks are subject to random or cyclic fluctuations. In any case, the lake trout has been the lamprey's chief victim. Scientists have developed electric fences or weirs to kill the lampreys ascending tributary streams from the lakes to spawn, and two chemicals (phenols) have been discovered that will, in proper concentration related to the stream flow, poison most of the young lampreys in the mud of the stream bed (where they live for three or four years) without much damage to fish in the stream. This control work is being continued under the international Great Lakes Fishery Commission.

Whitefish are sold mainly in the fresh or frozen, head-on dressed or filleted forms. The head is small, hence recovery rates in filleting are high in comparison, for instance, with codfish. The current recovery figure at Great Slave Lake is 50%. The rate varies widely, being lower at spawning time. Water temperatures in the different lakes are important factors, since the colder water presumably delays development of the gonads. Fisheries Research Board of Canada data, for example, show a yield of edible flesh (skinless fillets) of 39.2% for whitefish from Lac La Ronge in February, 49.3% from Great Slave Lake in January, 51.4% from Lake Winnipeg in June, and 43.4% from some Saskatchewan lakes in March. For fillets with the skin left on, the yield figure would be nine to 12 percentage points higher. Under the circumstances, an average recovery rate of 45% for skinless fillets is a conservative estimate.

Usually about 17% of the round weight is lost in gutting and less than 25% in beheading and gutting. However, glazing adds 8% to 12% to the frozen dressed weight. Consequently, 110 pounds round weight to 100 pounds frozen dressed, head-on (91% yield) might be an appropriate conversion ratio. The average yield of fresh dressed whitefish from the round would be near to 83%.

2. Disposition of the Catch

In the catch statistics for the inland fisheries of Ontario, the Prairie Provinces and the Northwest Territories, there are wide ranges of reliability, arising out of the different methods and conditions under which they are collected, particular circumstances of government administration, and the different forms in which the catch is marketed. In general, the user of statistics for these fisheries, apprised of the possible biases and aberrations, appropriately reserves and qualifies any conclusions he may base upon the statistics.

However, the difficulties faced by the respective provincial government administrations and the heavy cost that would be entailed in establishing and maintaining a flow of accurate information concerning the catch from the hundreds of lakes on the Prairies and in Ontario should not be underestimated. The statistical reporting of the Northwest Territories catch is simple by comparison, because Great Slave Lake is the only important centre of production, the number of fishermen and buyers is small, and practically the entire catch passes through the port of Hay River on its way to market.

Landings and landed values of whitefish in Canada are reported to be as shown in Table 1 following. The annual average for the nine years 1949-57 was 24.6 million pounds of whitefish, worth \$4.1 million. This was about 23% by weight, and 32% by value of landings of all freshwater species. The proportions have been lower in recent years, viz., 18% by weight, and 26% by value in 1956, and 21% by weight, and 27% by value in 1957.

Whitefish exports for the same nine years averaged 17.5 million pounds of fresh or frozen dressed and nearly one million pounds of fresh or frozen fillets. These figures combined (using as conversion rates to landed weight 100/85 and 100/45, respectively) represent as annual average export of 22.8 million pounds of whitefish as landed - viz., 93% of landings. Domestic disappearance, then, would have been about 1.8 million pounds a year, or half as much in terms of edible weight - about one-fifteenth of a pound per head of population. This is a figure too low to merit confidence. Since export figures are reasonably accurate, the obvious conclusion is that the catch figures may be too low.

The annual whitefish export figures for the decade 1949-58 appear in Table 2, including computed average export values per pound. (It may be noted that the average export value per pound of whitefish fillets is not greatly different from that of dressed whitefish.) In the absence of production data, the export figures may be used as an indication of the trend in the production of whitefish fillets, showing some increase over the 10 years. In terms of the landed weight equivalent, fillets represented about 10% of Canadian whitefish exports over the decade, and about 12% in the last four years.

TABLE 1. ANNUAL CANADIAN LANDINGS AND LANDED VALUES
OF WHITEFISH, BY PROVINCES, 1949 TO 1957^a

Year	Total ^b	Ontario	Manitoba	Saskatchewan	Alberta	Northwest Territories
A. <u>Quantity Landed in Thousands of Pounds</u>						
1949	22,509	7,063	4,220	3,542	1,828	5,757
1950	24,776	6,589	6,217	4,389	2,411	5,071
1951	26,506	7,180	6,125	5,852	2,703	4,580
1952	27,894	9,426	5,758	5,639	3,159	3,831
1953	25,571	10,214	4,539	3,889	3,021	3,866
1954	24,577	6,844	5,297	5,196	3,180	4,019
1955	21,990	4,451	5,184	5,008	2,686	4,600
1956	22,884	4,049	5,524	5,234	4,063	3,972
1957	24,395	3,226	6,482	6,423	3,962	4,302
B. <u>Value of Landings in Thousands of Dollars</u>						
1949	3,510	2,086	593	282	205	327
1950	4,021	1,922	980	404	291	408
1951	4,530	2,471	878	486	342	337
1952	4,749	2,628	859	407	414	426
1953	4,352	2,704	690	304	373	274
1954	4,425	2,290	878	417	428	404
1955	3,726	1,624	808	428	378	475
1956	3,636	1,403	724	474	538	488
1957	3,604	1,069	844	596	592	503
C. <u>Average Landed Value in Cents per Pound</u>						
1949	15.6	29.5	14.0	8.0	11.2	5.7
1950	16.2	29.2	15.8	9.2	12.1	8.0
1951	17.1	34.4	14.3	8.3	12.6	7.4
1952	17.0	27.9	14.9	7.2	13.1	11.1
1953	17.0	26.5	15.2	7.8	12.3	7.1
1954	18.0	33.5	16.6	8.0	13.5	10.1
1955	16.9	36.5	15.6	8.5	14.1	10.3
1956	15.9	34.6	13.1	9.1	13.2	12.3
1957	14.8	33.1	13.0	9.3	15.0	11.7

^a Fisheries Statistics of Canada, 1957, Dominion Bureau of Statistics, Ottawa.

^b Totals include additional small amounts landed in Quebec and New Brunswick.

TABLE 2. CANADIAN WHITEFISH EXPORTS, 1949 TO 1958^a

Year	Quantity (thousand pounds)			Value (thousand dollars)			Average Value per Pound (cents)		
	Fresh Whole or Dressed	Frozen Whole or Dressed	Fresh or Frozen Filletted	Fresh Whole or Dressed	Frozen Whole or Dressed	Fresh or Frozen Filletted	Fresh Whole or Dressed	Frozen Whole or Dressed	Fresh or Frozen Filletted
1949	14,816	2,091	575	4,300	528	157	29.0	25.3	27.3
1950	13,732	3,276	821	4,514	893	266	32.9	27.3	32.4
1951	14,980	3,965	1,062	4,867	1,142	348	32.5	28.8	32.8
1952	16,176	3,592	1,225	4,991	1,052	385	30.9	29.3	31.4
1953	16,663	3,467	708	4,942	1,066	202	29.7	30.7	28.5
1954	14,832	2,302	901	4,902	799	273	33.1	34.7	30.3
1955	13,149	2,988	1,162	4,351	1,115	370	33.1	37.3	31.8
1956	12,896	2,386	1,180	4,655	875	397	36.1	36.7	33.6
1957	13,489	2,922	1,235	4,839	969	428	35.9	33.2	34.7
1958	13,959	2,548	1,161	5,240	849	383	37.5	33.3	33.0
Average									
1949-58	14,469	2,954	1,003	4,760	929	321	32.9	31.4	32.0

^a Monthly Review of Canadian Fisheries Statistics or Trade of Canada, Dominion Bureau of Statistics.

3. Location and Conditions of Production

The bulk of Canadian fresh-water fish landings are made in Ontario, the Prairie Provinces, and Great Slave Lake in the Northwest Territories. Quebec, New Brunswick, and the Yukon have commercial inland fisheries on a smaller scale. Whitefish occur in all of the provinces and are the most important species in the commercial fresh-water catch.

An indication of the volume of production in each of the provinces is afforded by the quantities examined by federal Department of Fisheries inspectors, who are responsible for the inspection of all whitefish shipments to United States markets. Table 3 shows the amounts of whitefish inspected from the different provinces, and the districts in which inspection took place, during the four years ending March 31, 1957. Evidently, substantial amounts of Prairie fish are inspected in Ontario and Quebec, en route to eastern United States centres.

In Table 4 are shown the percentages of the total volume of inspected whitefish contributed by the various provinces in those four years. The three Prairie Provinces supplied about one-half of the volume moving into the United States or into other provinces, Ontario a little more than one-quarter. An average of about 19 million pounds of whitefish a year was inspected during the four-year period - fillets being combined with dressed whitefish in the total weight. Canadian exports of dressed whitefish and whitefish fillets together averaged a little more than 18 million pounds a year for an approximately corresponding four- (calendar) year period - either 1954-1957 or 1953-1956. Since re-inspected lots were not included in the statistics, no doubt the difference between inspections and exports represented inspected shipments that went into the domestic market.

The seasonal nature of the fresh-water fisheries is reflected by the data in Table 5, which presents the monthly totals of whitefish inspected in all of the inspection districts during the four years to March 31, 1957. The peak production periods are July and August in the summer, and January to March in the winter. Winter weather seriously restricts fishing activities on the Great Lakes, but where the lakes freeze over on the Prairies and in the Yukon and Northwest Territories, winter and summer fishing are distinctly different operations. No fishing takes place during the fall freeze-up or in the spring while the ice is breaking up, but winter fishing operations get into full swing when the ice becomes thick enough to bear the weight of men and vehicles. The summer fishery begins when the boats can operate, provided there are passable roads, or other means, to take the catch out to market.

Some fishermen may engage in the one fishery, but not in the other. The gear in general use is the gill-net, set from boats in the summer, and through holes in the ice in the winter. The winter fishery is carried on with horse- or tractor-drawn sleighs or cabooses, tracked snowmobiles called "bombardiers", and motor trucks. From some of the remote lakes, a tractor train of sleighs, with a heated caboose for the crew, may haul the catch 60 or 70 miles to the railway over routes that

TABLE 3. QUANTITIES OF WHITEFISH INSPECTED, BY PROVINCE OF ORIGIN AND DISTRICT OF INSPECTION, FOR THE YEARS 1953/54 TO 1956/57^a

(Thousands of Pounds)

Year Apr. 1-Mar. 31	Province of Origin	District of Inspection			Total
		Ontario & Quebec	Prairie Provinces	Northwest Territories	
1953/54	N.W.T.	9	-	2,814	2,823
	Alberta	1	2,359	-	2,360
	Sask.	681	1,499	-	2,180
	Man.	1,274	3,017	-	4,291
	Ontario	8,127	181	-	8,308
	Quebec	21	-	-	21
Grand Total		10,113	7,056	2,814	19,983
1954/55	N.W.T.	1	-	3,831	3,832
	Alberta	39	2,449	-	2,488
	Sask.	654	2,419	-	3,073
	Man.	1,124	3,536	-	4,660
	Ontario	4,117	620	-	5,737
	Quebec	39	-	-	39
Grand Total		6,974	9,024	3,831	19,829
1955/56	N.W.T.	20	18	3,774	3,812
	Alberta	18	2,301	-	2,319
	Sask.	798	2,495	-	3,293
	Man.	1,215	3,814	-	5,029
	Ontario	2,992	713	-	3,705
	Quebec	42	-	-	42
Grand Total		5,085	9,341	3,774	18,200
1956/57	N.W.T.	2	-	3,784	3,786
	Alberta	36	2,482	-	2,518
	Sask.	375	3,128	-	3,503
	Man.	772	3,951	-	4,723
	Ontario	2,318	1,030	-	3,348
	Quebec	57	-	-	57
Grand Total		3,560	10,591	3,784	17,935

^a Data summarized by the Economics Service from reports prepared by the Inspection and Consumer Service, Department of Fisheries, Ottawa.

TABLE 4. QUANTITIES AND PROPORTIONS OF INSPECTED WHITEFISH FROM THE DIFFERENT PROVINCES, 1953/54 TO 1956/57

Province of Origin	Four-Year Total (thousand lb.)	Annual Average	Per Cent of Total (%)
N.W.T.	14,253	3,563	18.8
Alberta	9,685	2,421	12.7
Sask.	12,049	3,012	15.9
Man.	18,703	4,678	24.6
Ontario	21,098	5,275	27.8
Quebec	159	40	0.2
Total	75,947	18,987	100.0

TABLE 5. MONTHLY AMOUNTS OF WHITEFISH INSPECTED IN ALL INSPECTION DISTRICTS, APRIL, 1953 TO MARCH, 1957^a

(Thousands of Pounds)

Month	Year (April 1-March 31)				Annual Average 1953-57	Per Cent of Annual Average (%)
	1953/54	1954/55	1955/56	1956/57		
April	848	605	480	398	583	3.1
May	1,538	903	772	652	966	5.1
June	1,900	1,677	1,714	1,215	1,627	8.6
July	2,850	2,721	2,864	2,109	2,636	13.9
August	2,055	2,526	2,350	3,272	2,551	13.4
September	1,427	1,752	1,366	1,150	1,424	7.5
October	1,197	851	688	1,135	968	5.1
November	1,422	1,177	642	779	1,005	5.3
December	1,586	1,559	1,410	1,311	1,467	7.7
January	1,496	2,144	2,122	2,142	1,976	10.5
February	1,878	1,914	1,783	1,866	1,860	9.8
March	1,786	2,000	2,009	1,906	1,925	10.1
Total	19,983	19,829	18,200	17,935	18,987	100.0

^a Source of data as given for Table 3.

would be impassable in summer. In some instances, particularly for the fresh fish trade, aircraft may be the only practicable method of transporting the fish, using pontoons or skis, according to the season, for landing on the lakes.

An ingenious device called a "jigger" is used in setting the net under the ice. A hole is chopped and the jigger, with a line attached, is inserted and by jerking on a cord, is made to crawl along the underside of the ice. A second fisherman follows it by sound and another hole is cut to bring it out, drawing the line with it, perhaps a hundred yards from the hole where it went in. The line is then used to draw the gill-net under the ice until it extends from one hole to the other.

The fishing boats in use on the Great Lakes are mainly closed-in steel-hulled steam or motor-driven "fishing tugs" 50 to 70 feet long, but there are lesser numbers of motor-driven launches and sailboats or rowboats. On the Prairie lakes, motor-driven boats are used, usually about 32 feet long, and 20-foot skiffs, but the recent trend on Great Slave Lake has been towards larger boats 35 to 45 feet long, powered with a 30 to 70 h.p. gasoline engine, with a deckhouse to shelter the crew, and capable of carrying up to five tons of fish.

The scale of capital investment per fisherman, in fishing boats and gear, is generally low in the Prairie fisheries, and much of the equipment is provided by the fish company or buyer at the lake, particularly when the fishermen - Indians or whites - are part-time trappers, hunters or farmers. On some lakes, the most successful fishermen finance their own operations and may even buy or, at least, pack and ship the catch of other fishermen. Great Lakes fishing enterprises using steel tugs require a heavy investment; fishermen may be owners or partners in the enterprise, or use boats and gear provided, all or in part, by a processing company.

Licensing and other administrative provisions differ considerably among the provinces. In Ontario, licence fees are generally graduated, according to the maximum yardage of nets they permit, and are also an administrative aid in limiting the number of fishermen to previous licence-holders, or to one individual or one Indian band on small lakes. Generally, a fee of \$10 permits the fisherman to use up to 3,000 yards of gill-net, \$20 up to 6,000 yards limit, and \$30 up to 9,000 yards. On Lake Erie, two rates are in effect: at the east end of the lake, the licence fee is \$125 (equivalent to about 36,000 yards of gill-net), and the other rate is \$50, for smaller operations. On important species - blue and yellow pickerel, lake trout, whitefish, and sturgeon - a royalty is also paid by fishermen, amounting to a quarter-cent a pound on production over and above five tons per 3,000 yards of net. (The exemption is 60 tons on a \$125 licence.) Different systems are in effect on Lake Nipigon and on small inland lakes, and for pound nets.

In Saskatchewan, Co-operative Fisheries Limited became, in the early months of 1959, the central selling and financing agent for 13

local co-operatives.¹ It has taken over processing plants from the Government of Saskatchewan on long-term payment arrangements. The local co-operatives are autonomous in production, but do not engage directly in packing or filleting operations. These are contracted out to private operators at specified rates for the different operations - dressing and boxing, filleting, packaging, etc. The contractor must get a specified yield in filleting and meet quality standards, subject to a penalty if the recovery rate or quality standards are not maintained.

In Alberta, a system of lake leases has been instituted, somewhat similar to the leasing of timber limits. Alberta Fisheries Products has been given a lease on certain lakes, calling for payment of a specified royalty on production (1¢ a pound for whitefish). The lease runs for five years with the option of renewal at the end of each five-year period. The lessee must take a minimum amount of fish yearly to hold his lease, and a maximum is set, also, for each lake. There is no limit on the number of fishermen, nor on the yardage of nets they use, but all fishermen must be licensed and legal mesh sizes must be used.

4. Assembly and First Sale

Regional marketing patterns differ considerably. The fishermen may sell to consumers, particularly in well-settled areas, or to pedlars who do so, but the larger part of the fresh-water catch is sold to dealers or processors, who may be also the exporters. Much of the frozen fish from the Prairie lakes is bought from the fishermen by traders, who put the fish into cold storage and sell to wholesalers or exporters as the demand arises. The dealers may be also wholesalers and exporters. Fishermen sell to a packer on the lake, who may be an independent buyer, but more often an agent for a company which finances his operations and guarantees a fixed return (of, say, 4¢ a pound on whitefish).

On Lake Winnipeg, for instance, whitefish, after being packed with ice in boxes, is transported by barge and rail to Winnipeg, where it might be filleted or re-packed and exported as fresh dressed fish. The costs might include \$1 to \$2 a hundred pounds for freight by tug on the lake, and a dollar a hundred for handling charges at Winnipeg. From more remote lakes, aircraft are used to bring the fish in to railhead, for instance, at The Pas, Lynn Lake, or Flin Flon, at a cost of, perhaps, \$5 to \$8 per cwt., and shipment is by rail the rest of the way to Winnipeg, at from \$2 to \$3 per cwt. in carload lots.

When transportation costs are high, savings may be effected by carrying out filleting operations close to the source of supply. As an example of this type of operation, the Northland Fishing Company has a filleting plant at Island Lake, Manitoba, and operates its own fleet of

¹ Thus, the situation changed somewhat from that described in Volume II, p. 264, of the Report of the Royal Commission on Price Spreads of Food Products.

aircraft. Fish from Island Lake and fish flown in from surrounding territory are filleted, and the fillets are flown out to Riverton and moved thence by truck or rail to Winnipeg.

In Ontario, a number of fishermen's local co-operatives are active, packing, and in some instances, filleting fish for domestic sale or export. Processors and wholesalers buy from the fishermen and pack or fillet the fish for shipment, likewise, to the principal Canadian and United States markets. Some firms buy exclusively for customers or parent companies in the United States. Some Toronto wholesale-retail specialty fish stores prefer to buy directly from fishermen, and these may then smoke or otherwise process some of the fish before re-sale.

On Great Slave Lake, half-a-dozen companies buy from the fishermen on the ice or at his icehouse, or at the company dock or barge. Company boats in summer, and trucks and bombardiers in winter, bring supplies to the fishermen and haul the fish back to Hay River, the northern terminus of the Mackenzie Highway. From this point, transportation is by truck to Grimshaw or Peace River, Alberta, and thence by train to Chicago, Detroit or New York. Few shipments are made directly from Hay River to United States centres by refrigerated truck, because of the scarcity of return loads.

In the summer fishery on Great Slave Lake, an average day's catch for two men might be 3,000 pounds, mainly lake trout and whitefish. The fish are stowed below in ice as soon as they are caught. The boat is unloaded at the company barge, a floating factory moored to the shore at the temporary summer base camp, where the fish are cleaned and dressed or, at some points, filleted, and packed again in ice in shipping boxes for the journey to market. The boxes are lowered into the refrigerated hold of a freight boat for the trip across the lake to Hay River.

Handling of the winter catch depends upon whether it is to be sold as "fresh" or "frozen". Fresh fish are cleaned as quickly as possible on the ice and loaded into a heated caboose or snowmobile; more often they are taken back to Hay River and dressed under more comfortable conditions. Care has to be taken to prevent the fish from freezing during transportation in sub-zero weather. Fish for the frozen trade are dressed immediately on the ice and allowed to freeze. The holding and transportation of frozen fish presents fewer problems, except those entailed by mild weather.

The price paid to the fishermen is influenced by a number of factors, including the market demand-supply situation and the degree of competition among local buyers, quality differences or market preferences for fish from certain lakes, differences in transportation costs, and differences in the form in which the fish is to be marketed. As indicated by the monthly inspection data for whitefish in Table 5, the supply varies quite widely from month to month. Variable supply, in conjunction with uncorrelated peaks in the demand for fresh-water fish during Lent and the Jewish religious holidays, results in wide seasonal, weekly, or even daily variations in market prices. Also the Jewish preference for fresh whole fish results in premium prices for fresh

dressed whitefish, and although that preference is declining, the price of whitefish fillets still tends to range below what would be a comparable price in terms of edible weight and the cost of filleting.

Quality differences are exemplified by the United States market preference for whitefish from Lake Erie, Georgian Bay, or Lake Superior.¹ Lake Erie fishermen get higher prices for whitefish than other Ontario producers, in part because of this market preference, in part because practically all Lake Erie whitefish are sold in the fresh dressed market, rather than frozen. Similarly, Lake Winnipeg whitefish are sold at premium prices in the fresh form, whereas whitefish from some of the northern Prairie lakes have flesh of a darker hue and rate much lower in consumer preference.

Regional advantages in transportation costs are important, and so is the time element in marketing fresh fish. The lakes that are inaccessible by road or railroad have to depend on air freight, or possibly on snowmobiles or tractor trains in the winter. Fish destined for the fresh market would have to bear the cost of air transportation at least part way. Because of distance, poor transportation facilities, and the necessity for extra handling (e.g., in trans-shipment), the fresh fish market is closed to some lakes.

For these reasons, fishermen receive low prices for their fish in remote areas. However, filleting at the lake may reduce the shipping weight and consequently, the transportation costs, by one-half, and this, in conjunction with a low raw material cost, may make a filleting operation financially practicable, even though the fillets may be sold for little more per pound than dressed fish.

The strong influence on the price of fresh-water fish exercised by seasonal demand and supply factors is not shown in the annual average price figures in Table 1, but is evident in the seasonal catch data for the Northwest Territories (Great Slave Lake) in recent years (Table 6). Great Slave Lake fishermen sell their whitefish for much higher prices in winter than in summer. The summer fishery there has to sell fresh fish in competition with heavy production from the Great Lakes and other areas, but Great Lakes landings are small in winter and the Great Slave industry is probably better organized to ship out fresh fish in winter than many of the Prairie producers. Then, too, because of its relatively heavy production of lake trout, it has the advantage of tied sales; it is easier to sell a 20,000-pound (minimum) carload of fresh fish containing, say, 5,000 pounds of lake trout and 15,000 pounds of whitefish, than a carload of whitefish only.

Another example of price variation, according to location and season, is provided by the average landed values at different Manitoba lakes, shown in Table 7. Quotations are for the summer season, unless otherwise specified. The Northland Fishing Company filleting plant is

¹ See price quotations in the Chicago Daily Fishery Report, Market News Services, Bureau of the Commercial Fisheries, U.S. Department of the Interior.

TABLE 6. QUANTITY, TOTAL VALUE, AND VALUE PER POUND OF WHITEFISH LANDINGS, BY SEASONS, IN THE NORTHWEST TERRITORIES, 1954 TO 1958^a.

Year	<u>Winter Season</u> December to March ^b			<u>Summer Season</u> May or June to September		
	Quantity (thousand lb.)	Value (\$ thousand)	Value per Pound (¢)	Quantity (thousand lb.)	Value (\$ thousand)	Value per Pound (¢)
1954	1,591	255	16.0	1,127	78	6.9
1955	1,980	258	13.0	2,401	156	6.5
1956	1,789	232	13.0	2,275	147	6.5
1957	1,868	307	16.4	2,681	268	10.0
1958	1,527	249	16.3	1,846	194	10.5

a D.B.S., Monthly Review of Canadian Fisheries Statistics.

b For 1954, January to March landings only are included.

TABLE 7. PRODUCTION, LANDED VALUE AND MARKETING VALUE OF WHITEFISH FROM SELECTED MANITOBA LAKES, YEAR 1957/58^a

Source	Production (thousand lb.)	<u>Value to Fishermen</u>		<u>Marketed Value</u>	
		Total (\$)	Average (¢/lb.)	Total (\$)	Average (¢/lb.)
All Lakes	6,481	843,946	13	1,729,056	27
Lake Winnipeg					
- Summer	1,097	274,200	25	438,720	40
- Fall	268	53,540	20	107,080	40
Lake Winnipegosis					
- Summer	14	1,420	10	2,840	20
Island Lake	432	19,445	4½	77,778	18
Moose Lake	58	7,008	12	14,016	24
Sipiweesk Lake	34	4,107	12	8,214	24

a Preliminary data by courtesy of Fisheries Branch, Manitoba Department of Mines and Natural Resources. See also Annual Report for Period Ending March 31st, 1958, Fisheries Branch, which shows larger landings for Lake Winnipeg and Lake Winnipegosis.

located at Island Lake. The production at South Indian, Sipiwesk and Moose Lakes is fresh dressed fish.

5. Processing

Not much processing is required in packing frozen dressed whitefish; as previously stated, the winter fishermen may dress and freeze the fish on the ice, and it may be kept under natural refrigeration until shipped to a central distribution point, such as Winnipeg. Naturally-frozen fish is, however, of poorer quality than quick-frozen fish. Glazing the frozen fish by dipping it in water is necessary to prevent desiccation during storage. The frozen fish is placed in shipping boxes for movement by rail or truck to market or into cold storage.

More plant facilities, including ice storage, are required for packing fresh fish, although many of the existing establishments are small, being little more than a shed in which the dressing and packing is done. Still more equipment is needed for producing fillets, particularly freezers if the product is to be frozen. Consequently, there are relatively few filleting plants, and some of these also produce fish sticks and other specialties marketed through display freezer cabinets. The Canadian Fisheries Annual in its directory of fishing companies lists about 20 companies producing fresh-water fish fillets. About a third of these are in Ontario, and another third in Manitoba. Some plants may produce little or no whitefish fillets, but may fillet other species in more plentiful local supply, such as pike, pickerel, lake herring, or fresh-water perch.

A small but increasing proportion of the whitefish catch is filleted. The preference of Jewish customers has been for fresh whole fish, used for making "gefilte fish" in the home - a mixture of minced fish of several varieties with added spices, served in a ball or "patty". There is a trend, however, towards the marketing of ready-made gefilte fish, and for this fillets of pickerel, pike, whitefish and other fresh-water species may readily serve as the raw material. Some increase in the marketing of whitefish fillets may be explained on this basis, and the making of gefilte fish by processor, wholesaler or retailer represents another service added in the marketing chain, as required by changing consumer demands.

The greater part of the production of whitefish fillets is in the frozen form. It would usually be uneconomic to fillet fish that could be sold in the fresh dressed form, because the fillets, whether fresh or frozen, would command a price little higher, or perhaps even lower, than the fresh dressed fish. For example, whitefish for which the fishermen received 14¢ a pound might be put on the Chicago market as fresh dressed for an additional 11¢, including 3¢ for boxes and materials and 8¢ for transportation, duty ($\frac{1}{2}$ ¢), brokerage and profit - i.e., a cost to the Chicago wholesaler of 25¢. If this fish were filleted, a 50% recovery rate would mean a 28-cent cost for raw material (per fillet-pound), an estimated processing cost of 12½¢ for filleting,

skinning, candling, packaging (including materials), and freezing, $4\frac{1}{2}\text{¢}$ for transportation, $1\frac{1}{2}\text{¢}$ duty, and perhaps 5¢ for commission and profit - making a laid-down cost of about 52¢ a pound. By the same rough method of calculation, fish for which the fishermen received 6¢ a pound could be filleted and delivered in Chicago or Detroit for about 35¢ a fillet-pound.

The rule-of-thumb trade estimate of $12\frac{1}{2}\text{¢}$ for filleting costs may be wide of the mark, of course, for many processors. Filleting would reduce the weight for transportation by one-half, but the economy in transportation would be easily outweighed by a failure of the market price to reflect the gain in edible weight over the dressed form.

Generally, fresh-water fish filleting plants are not able to utilize the offal in fish meal production. Keystone Fisheries Limited of Winnipeg is the only one listed in the Canadian Fisheries Annual directory of fish meal producers.

6. Distribution - Assemblers and Processors to Retail

The speculative buying of frozen fish by dealers or traders is important in getting the fish off the ice and into cold storage before the spring breakup, and in regulating the supply, in accordance with market demand. Brokers or commission agents likewise serve to smooth and adapt the market flow - an important function in a market as variable as that for fresh-water fish. In most domestic markets, because of the small volume handled, the wholesale and retail markups could be expected to be high; a slow turnover means greater losses through deterioration on fresh fish items, particularly if consumption is predominantly a one-day-a-week (Friday) occurrence.

No official Canadian wholesale price series is available for whitefish fillets, and no retail price series, either for Canada or the United States, presumably because the bulk of the trade is in fresh and frozen dressed whitefish. Some of the available series are brought together in Table 8, limited for the sake of brevity to the two years 1957 and 1958. For comparison, monthly quotations on frozen whitefish fillets, five-pound cello pack, by a Toronto wholesale house were stable at 45¢ a pound throughout 1957 and 1958, and ranged from 42¢ to 38¢ and 40¢ for most of the intervening time, until the 45-cent level was reached in the spring of 1956.¹ Evidently, the wholesale price of frozen whitefish fillets was 3¢ to 7¢ lower in Toronto than in Chicago. It is also apparent that the prices of frozen whitefish products fluctuated much less widely than the price of fresh dressed whitefish, through the month or through the year.

The Chicago wholesale quotations for "Alberta or Canadian" fresh dressed whitefish range much below those for the "Lake Superior"

¹ Quotations by White's Fish Company, Toronto, Division of National Sea Products Ltd., through the courtesy of the Economics Service, Department of Fisheries, Ottawa.

TABLE 8. DRESSED WHITEFISH AND WHITEFISH FILLETS: MONTHLY WHOLESALE PRICE RANGE AT CHICAGO AND AVERAGE WHOLESALE AND RETAIL PRICES AT TORONTO, 1957 AND 1958.

(Cents per Pound)

Period	TORONTO ^a			CHICAGO ^b			
	Fresh		Frozen	Dressed		Frozen	
	Dressed		Dressed	Fresh		Filletts	
	Whitefish		Whitefish	Whitefish		Canadian	
				Alberta Lake or Superior			
	Retail	Wholesale	Wholesale	Canada		1-lb.	5-lb.
<u>1957</u>							
Jan.	59.5	40.5	29.2	53-70	33-45	50-52	48-50
Feb.	57.5	40.0	29.2	68-75	40-53	50-52	48-50
Mar.	48.0	42.5	29.0	75-80	35-53	50-52	48-50
Apr.	58.0	-	27.2	73-95	48-65	50-52	48-50
May	63.9	-	25.8	62-68	40-45	50-52	48-50
June	59.8	37.5	25.9	58-63	38-45	50-52	48-50
July	57.4	34.2	25.9	40-54	32-40	56-58	50-52
Aug.	56.9	30.0	25.6	56-62	30-37	56-58	50-52
Sept.	55.7	33.7	26.9	62-75	30-45	55-57	50-52
Oct.	56.4	35.0	26.9	60-74	38-50	55-57	50-52
Nov.	55.4	-	27.5	43-75	30-35	55-57	50-52
Dec.	58.2	37.5	28.2	48-72	23-55	55-57	50-52
<u>1958</u>							
Jan.	58.2	34.5	27.2	50-60	30-42	55-57	50-52
Feb.	58.2	33.5	27.2	60-75	30-43	55-57	50
Mar.	61.2	35.8	26.2	75-85	38-55	55-57	50
Apr.	63.7	-	26.2	58-100	-	54-56	48-50
May	62.0	-	26.2	50-78	-	54-56	48-50
June	58.3	-	26.8	47-55	35-40	54-56	48-50
July	54.4	31.0	26.8	45-54	30-35	54-56	48-50
Aug.	54.4	30.3	26.8	53-55	36-38	54-56	48-50
Sept.	57.0	33.3	26.8	56-85	35-55	54-56	48-50
Oct.	55.8	36.2	26.8	60-70	32-48	54-56	48-50
Nov.	55.3	35.7	26.8	68-75	40-58	54-56	48-50
Dec.	58.3	36.5	26.8	58-78	23-45	54-56	48-50

a Averages of mid-month wholesale quotations and first-of-the-month retail quotations at Toronto, from Monthly Review of Canadian Fisheries Statistics, Dominion Bureau of Statistics, Department of Trade and Commerce.

b Prices for sales in wholesale quantities by original receivers at Chicago, from Chicago Daily Fishery Report, Market News Services, Bureau of the Commercial Fisheries, U.S. Department of the Interior.

classification. Quotations under the latter heading occasionally are nominated "Ontario", and it is possible that the classification loosely includes all Great Lakes whitefish, as distinct from shipments from the Prairies - in recognition of a strong market preference for whitefish of Great Lakes origin.

Winnipeg and Toronto wholesale prices include, of course, transportation costs into those markets, and export values similarly include some part of the freight costs, at least to the United States border. The cost of moving Great Slave Lake fish by truck from Hay River to railhead at Grimshaw, Alberta, has been reported as \$35 a ton, net, and the railway carload express rate from Grimshaw or Peace River to Chicago is \$5.15 per hundred pounds, or \$5.65, duty paid, on dressed fish. Fresh dressed whitefish from Great Slave Lake can therefore be laid down in Chicago at a cost of about 7¢ a pound for freight.

Sample rates from Winnipeg are as follows:

	Rate per 100 lb.	
	L.C.L.	Carload
<u>TO</u>		
Toronto	\$5.25	\$4.40
Windsor	5.63	4.82
Montreal	5.50	4.70
Chicago	4.80	3.82
Detroit	6.47	4.82
New York	7.69	5.08

The minimum weight per carload is usually 15,000 pounds, net, where there is competing highway transport. On less-than-carload shipments, the express rate is charged on net weight, plus 25% for ice.

Very little fish goes by railway express from Winnipeg to New York; it is cheaper to ship to Montreal by rail and by truck the rest of the distance. Likewise, it is cheaper to ship L.C.L. lots to Windsor and truck the fish across the river to Detroit.

The United States customs duty is $\frac{1}{2}$ ¢ a pound on dressed fresh-water fish, and $1\frac{1}{2}$ ¢ a pound on the fillets. The discount on United States funds in converting them into Canadian dollars would also represent a cost to the Canadian exporter ranging up to 5% on the price received in the United States.

Inspection by inspectors of the federal Department of Fisheries is, by arrangement with provincial jurisdictions, compulsory for whitefish destined for export. Inspection of other fresh-water species may be obtained by request, but is not compulsory. Canadian inspection standards are purposely stricter than the American, but probably because of sample variations, occasional lots of Canadian whitefish are pronounced unfit for human consumption by United States Health Department

authorities under the Food and Drug Act. Such shipments are usually seized and destroyed; sometimes they may be returned to the Canadian exporter, but the situation is apparently more complicated if the product has moved into interstate commerce.

There is nothing at present to prevent whitefish that has been returned to the Canadian exporter, or whitefish that has been rejected for export by Canadian inspectors, from being sold on the Canadian market.

7. Retail Distribution, Restaurants and Institutions

There is little data on the distribution pattern of whitefish in Canada, nor on the volume of consumption in the various regions - but it is in total, as stated in Section 2, very small - apparently somewhat less than two million pounds a year. Much of the fresh whitefish is sold through wholesale-retail specialty stores in the larger cities. Fresh and frozen fillets are sold, like those of other species, through display cabinets in retail stores. A considerable volume of frozen dressed fish, including whitefish, may be sold by dealers or pedlars by house-to-house delivery on the Prairies - a similar method of distribution, the extensive so-called "mail-order" fish trade, is used in the American mid-west. Much local consumption by Indian bands and white fishermen and even some local sales may have been omitted from the statistics.

8. Measurement of the Price Spread

According to the Toronto price quotations, the monthly wholesale-to-retail price spread on fresh dressed whitefish has ranged between 25% and 55% of the retail price. Based on three-month moving price averages (the wholesale average centred, and the retail average lagged) the wholesale-retail spread was somewhat narrower - usually in the range of 30% to 40% - but higher markups were registered in the summer months, reflecting the increased risk of spoilage in handling fresh fish in warm weather.

A few price quotations obtained by special investigations indicate that the Toronto retail price for fresh dressed western whitefish was 43¢ to 45¢ in January, 1959, compared with a wholesale price of 15¢ to 25¢. The markup was therefore 42% to 67% of the retail price. The retail price in Winnipeg ranged between 25¢ and 59¢ a pound during 1958, the average being about 33¢ in the last four months of the year, and somewhat higher in the spring. Railway freight or express rates from Winnipeg to Toronto would represent a cost of from 4½¢ to 6½¢ a pound.

Wholesale price quotations in Toronto for Great Lakes whitefish ranged from 60¢ to 90¢ a pound in late January, 1959. However,

comparison of landed values of whitefish from Lake Erie or other Ontario sources with the Toronto average wholesale price quotations indicates the futility of trying to measure price spreads without specific information as to the origin of the fish and the price paid to the fishermen; the Toronto wholesale price was frequently less than the landed value reported for Lake Erie whitefish. In the absence of adequate information, it may be surmised that most of the whitefish sold in Toronto was of western origin.

A sample fishermen price-retail price spread for Manitoba fishermen can be computed, assuming the average retail price in Toronto to have been near to 45¢ a pound for western whitefish in late 1957, and assuming that Moose Lake fresh dressed whitefish was shipped to Toronto. Moose Lake whitefish brought the fishermen 12¢ in the summer of 1957, which was close to the Manitoba average of 13¢. (See Table 7.) Accordingly, the Moose Lake fisherman received about 27% of the Toronto retail value of his product.

28,

